NAME	QUALIFICATION(S)	SPECIALIZATION	DESIGNATION
O. J. Olaoye	B. Agric (Abeokuta), M.Sc. (Ibadan). Ph.D (Abeokuta) , PGDE(Abeokuta)	Fisheries Extension and Production Management	Principal Extension Fellow
A. A. Idowu	B.Sc, (Lagos)) M.Sc & PhD (Ibadan)	Fisheries Management & Ecotoxicology	Senior Lecturer
I. Abdulraheem	ND, B.AQFM, MAF, PhD(Abeokuta)	Fish Breeding and Genetics	Lecturer I
A. A. Adeoye	B.AQFM, MAF (Abeokuta), PhD(Plymouth).	Aquaculture and Fish Nutrition	Lecturer II
Oluwaseun C. Ojelade	B.AQFM, MAF, PhD (Abeokuta).	Aquaculture and Fisheries Management	Lecturer II

DISTRIBUTION OF UNITS FOR GRADUATION

3 - Years Programme	4 Years Programme	5 - Years Programme
University Compulsory Courses		
(I) General Studies		5
(ii) PCP 201, APH 202, PHS 364		17
(iii) AC 100 Level		-
Core Courses		
100 Level	-	32
200 Level	41	41
300 Level	16	20
400 Level	18	16
500 Level	35	35
Electives	**3**	**3**
Total	**113**	**169**

Course Contents

100 Level: FIRST SEMESTER

Course Code	Course Title	U	L	T	P
Compulsory Courses					
CHM 101	Introductory Physical Chemistry I	3	3	-	-
BIO 101	General Biology I	2	2	-	-
BIO 103	Introductory Physiology I	2	2	-	-
BIO 191	Practical Biology I	1	-	-	1
CHM 191	Practical Chemistry I	1	-	-	1
MTS 105	Mathematics for Non-Major	3	2	1	-
PHS 105	General Physics for Non-Major	3	2	-	1
PHS 191	Physics Laboratory I	1	-	-	1
Total		**16**	**11**	**1**	**4**

100 Level: SECOND SEMESTER

Course Code	Course Title	U	L	T	P
GNS 101	Use of English	2	2	-	-
GNS 102	Introduction to Nigeria History	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
CHM 102	Introduction to Organic Chemistry	2	2	-	-
CHM 104	Introduction to Inorganic Chemistry	2	2	-	-
MTS 106	Mathematics for Non-Major	3	2	1	-
CHM 192	Practical Chemistry II	1	-	-	1
AEM 102	Principle of Economics	2	2	-	-
PHS 106	General Physics for Non-Major II	3	3	-	-
PHS 192	Physics Laboratory II	1	-	-	1
BIO 102	General Biology II	2	2	-	-
BIO 192	Practical General Biology II	1	-	-	1
Total		**21**	**17**	**1**	**3**

200 Level: FIRST SEMESTER

Course Code	Course Title	U	L	T	P
Compulsory Courses					
SOS 211	Principles of Soil Science	2	2	-	-
FWM 201	Introduction to Forest & Wildlife Resources Management	2	2	-	-
STS 201	Statistics for Agricultural and Biological Students	3	2	1	-
PCP 201	Principles of Crop Production	2	1	-	1
CSC 201	Introduction to Computer Science	3	2	-	1
FIS 211	Introduction to Fisheries Management	1	1	-	-
FST 201	Introduction to Food Technology	2	2	-	-
ANP 201	Comparative Anatomy and Physiology of Farm Animals	2	1	-	1
AEM 201	Principles of Agric. Economics	2	2	-`	-
AGR 203	Introduction to Biotechnology	2	1	-	1
AGR 201	General Agriculture	3	3	-	-
Total		**24**	**19**	**1**	**4**

200 Level: SECOND SEMESTER

Course Code	Course Title	U	L	T	P
Compulsory Courses					
WMA 202	Introduction to Climatology and Biogeography	3	3	-	-
ANN 202	Introduction to Animal Biochemistry	3	2	-	1
APH 202	Introduction to Animal Production	3	2	-	1
PCP 202	Crop Anatomy, Taxonomy and Physiology of Agricultural Plant	2	1	-	1
HSM 200	Introduction to Home Science and Management	2	1	-	1
ETS 206	Entrepreneurship Studies and Change Management	2	2	-	-
GNS 201	Literature in English	1	1	-	-
GNS 202	Elements of Politics and Government	1	1	-	-
GNS 203	Writing and Literary Appreciation	1	1	-	-
GNS 204	Logic and History of Science	2	2	-	-
TOTAL		**20**	**16**	**-**	**4**

Due to the listed compulsory courses by NUC in BMAS, all GNS courses will be taken in second semester as a result of excess workload in the first semester**.**

All courses are core courses for Agriculture, Fisheries and Forestry.

300 Level: ***FIRST SEMESTER***

Course Code	Course Title	U	L	T	P
FIS 301	Fish Biology	2	1	-	1
FIS303	Ichthyology (Systematics of Fish)	2	1		1
FIS 305	Limnology	2	1	-	1
FIS 307	Fish Ecology	2	1	-	1
FIS 309	Aquaculture	3	2	-	1
FIS 311	**Aquatic Flora and Fauna**	2	1	-	1
FIS 313	Fish Farming Techniques and Hatchery Management.	3	2	-	1
FIS 315	Analytical Techniques in Fisheries	3	2	-	1
Total		**19**	**11**	**-**	**8**

300 Level: SECOND SEMESTER

Course Code	Course Title	U	L	T	P
FIS 302	Fish Nutrition	2	1	-	1
FIS 304	Fish Gear Design and Production	3	2	-	1
FIS 306	Introduction to Fish Microbiology and Pathology	2	1	-	1
FIS 308	Elementary Seamanship and Navigation	2	1	-	1
FIS 310	Oceanography	2	1	-	1
FIS 312	Introduction to Fish Pond Construction and Management	2	1	-	1
FIS 314	Fish Adaptation and Physiology	3	2	-	1
FIS 318	Fisheries Stock Assessment	2	1	-	1
WMA 318	Water Quality Assessment and Pollution Control.	2	1	-	1
PHS 364	Energy and Environment.	1	1	-	-
ANN 304	Principles of Agricultural Biochemistry	**2`**	**1**	**-**	**1**
	Total	**23**	**13**	**-**	**10**

400 Level: (Practical Year)
Aquaculture and Fisheries

COURSE CODES	COURSE TITLES	U	L	T	P
AFP 401	Fish Processing, Preservation and Marketing	3	-	-	3
AFP 402	Industrial Fishing and Oceanography Techniques	3	-	-	3
AFP 403	Fish Production, Management Techniques and Accounting practices	2	-	-	2
AFP 404	Integrated Fish Culture	2	-	-	2
AFP 405	Fish Hatchery Management, Fingerling and Fry Production	3	-	-	3
AFP 406	Fish Gear Use, Design, Production and Maintenance	3	-	-	3
AFP 407	Aquatic Environment Survey	2	-	-	2
AFP 408	Pond Construction and Management Techniques	3	-	-	3
AFP 409	Fish Nutrition and Fish Food Technology	3	-	-	3
AFP 410	Laboratory Techniques in Fish Microbiology and Pathology	2	-	-	2
AFP 411	Fish Stock Assessment and Biodiversity	1	-	-	1
AFP 412	Identification of Nigerian Fishes	1	-	-	1
AFP 413	Small Scale Fisheries and Livelihood Study	1	-	-	1
AFP 414	Aquatic Ecosystem Health and Maintenance	1	-	-	1
AFP 415	Aquaculture Engineering	3	-	-	3
AFP 416	Report Writing	3	-	-	3
	Total	**36**	**-**	**-**	**36**

500 Level: FIRST SEMESTER

COURSE CODES	COURSE TITLES	U	L	T	P
FIS 501	Fish Production and Management	3	2	-	1
FIS 503	Production of other Marine Products	2	1	-	1
FIS 505	Ornamental Fisheries and Aquaria Design	2	1	-	1
FIS 507	Fish Population Dynamics	2	1	-	1
FIS 509	Fish Farming Engineering	2	1	-	1
FIS 511	Administration and Programme Planning in Extension	2	1	-	1
FIS 597	Seminar	2	-	-	2
	Elective	3	2	-	1
	Total	**18**	**9**	**-**	**9**
Electives					
BIO 405	Hydrobiology	3	2	-	1
EMT 511	Ecological Disasters and Control	3	2	-	1

500 Level: Second Semester

COURSE CODES	COURSE TITLES	U	L	T	P
ANN 502	Nigerian Feeds and Feeding Stuffs	3	2	-	1
FIS 502	Fishery Technology, Processing and Storage	2	1	-	1
FIS 504	Advanced Fish Nutrition	2	1	-	1
FIS 506	Fisheries Economics	2	2	-	-
FIS 508	Advanced Fisheries Microbiology and Pathology	2	1	-	1
FIS 510	Fish Farming and Fishery Business Management	2	1	-	1
FIS 512	Fisheries Policy and Legislation	2	2	-	-
FIS 514	Marine and Brackish Water Economic Resources	2	1	-	1
FIS 599	Project	4			4
	Total	**21**	**11**	**-**	**10**

COURSE SYNOPSES

FIS 211: INTRODUCTION TO FISHERIES MANAGEMENT (2 Units)

The important fishes of West Africa with emphasis on Nigeria species. Classification, evolution, morphology and basic structure of fishes. The adaptation of fish to aquatic Life cycle of principal species of fishes. Significance of the fishes in the life of Nigerians. The fish industries in Nigeria. Fundamental principles of fish management and production.

FIS 301: FISH BIOLOGY (2 Units)

The gross external and internal anatomy of a typical bony and a typical cartilaginous fish. The different types of anatomical systems and basic functions of each system of organs in the fish. Embryology and life history of a fish with special reference to commercially important fish e.g. tilapia, clarias, catfish and mullet. (1 hour of lectures and 3 hours of practicals per week).

FIS 303: ICHTHYOLOGY (SYSTEMATICS OF FISH) (2 Units)

Principles of systematics. Taxonomy and detailed study of principal commercial species of Nigerian fish; inland, estuarian and ocean, water invertebrates and reptiles. Identification of species using keys and monographs. Important world species; sardine, tuna, anchornv eta etc. biological attributes of fish populations. Phyolgenetic relationship. (1 hour of lectures and 3 hours of practical per week).

FIS 305: LIMNOLOGY (2 Units)

Physical and chemical properties of both inland and sea water. Hydrology and water cycles. Properties of natural and man-made lakes. Thermal properties and stratification.(1 hour and 3 hours of practical per week).

FIS 307: FISH ECOLOGY (2 Units)

Ecology of fishes with special reference to distribution and natural history and application of this knowledge for fisheries management and obtaining maximum returns from fishery resources. Characteristics of the aquatic environment. Organic production in aquatic fauna and flora-algal blooms and eutrophication; plankton, and benthos, biomass assessment. Food and feeding habit of fish, food and habit selection, population, niche concept. Food chains. Reproductive behaviour of and life cycles of some selected species. (1 hour of lectures and 3 hours of practicals/week).

FIS 309: AQUACULTURE (3 Units)

Aims and types of aquaculture. History, present organization and status of aquaculture in Nigeria. Principles of aquaculture - liming and pond fertilization; food supply; growth rate and food conversion; selection of culture species, introduction of exotic species and their implications. Water requirements. Stocking, feeding and harvesting practices. Fish farm design. Economic consideration of aquaculture. (2 hours of lectures and 3 hours of practical per week).

FIS 311: AQUATIC FLORA AND FAUNA (2 Units)

Study and identification of the characteristic flora and fauna of importance in the fresh water and coastal swamps of the tropics. The ecology, utilization and management of aquatic flora and fauna. Control of aquatic weeds in ponds – chemical, mechanical and biological. (1 hour of lectures and 3 hours of practical/week).

FIS 313: FISH FARMING TECHNIQUES AND HATCHERY MANAGEMENT (3 Units)

Artisanal and commercial fishing methods and importance in fishing boats, trawlers and gears – hooks, traps and nets – different types of fish culture techniques, monoculture, polyculture, selected breeding, intensive and extensive culture in inland and brackish water, in rice fields, in floating cages and rafts. Gear selectivity; electro fishing. Spawning methods; artificial fertilization; incubation, rearing, harvesting and

transportation of fry and fingerlings. Selection and care of breeders; larvae and fingerlings. Control of weeds, parasites and diseases in the hatchery, control of physiochemical properties of water. (2 hours of lectures and 3 hours of practical/week).

FIS 315: ANALYTICAL TECHNIQUES IN FISHERIES (3 Units)

Laboratory training in the methods and techniques of proximate analysis. Haematological assessment of fish blood. Age determination, food conversion efficiency.

FIS 302: FISH NUTRITION (2 Units)

Principles of fish nutrition. Chemistry and Nutritive value of various classes of fish food. Nutrient requirements of fish. Nutrient sources and practical consideration in fish feeding.

FIS 304: FISHING GEAR TECHNOLOGY (2 Units)

Study of types of gear and fishing craft. Properties of the materials used in the construction of fish gears. Construction of hooks, traps and nets. Assessment of efficiency of fishing gear. (1 hour of lectures and 3 hours of practical/week).

FIS 306: FISH PARASITES AND DISEASES (2 Units)

Identification, morphology, taxonomy, life history of fish parasites. The ecological and pathological effects of parasites and diseases of fish. Epidemiology of parasites populations in water body. Common bacterial, fungal and viral fish diseases and their control. Other enemies of fish. International restriction blinding the transportation of fish across country boundaries. Fish ponds and public health. (1 hour of lectures and 3 hours of practicals/week).

FIS 308: ELEMENTARY SEAMANSHIP AND NAVIGATION (2 Units)

Important sea terminology; parts of a boat, strength of wind and state of sea. Coast lights and light vessels. Measures for distance, depth, speed etc. launching and boarding of small boats. Life saving and firefighting equipment and methods. Swimming (1 hour of lectures and 3 hours of practicals/week).

FIS 310: OCEANOGRAPHY (2 Units)

Study of the temperature and chemistry of sea water. Biological activities and their distribution. Salinity, chlorinity, currents, tides, waves, sound and radiation in the sea, conductivity diffusion, viscosity and dynamics of sea water. Distribution and behaviour of plankton. Brackish water conditions and fauna. Interrelationship of and physiological adaptations of marine organisms. (1 hour of lectures and 3 hours of practicals/week).

FIS 312: FISH POND CONSTRUCTION AND MANAGEMENT (2 Units)
Principles of fish pond construction. Preparation of ponds for stocking. Management of flora and water quality, maintenance of ponds. Harvesting from ponds. (1 hour of lectures and 3 hours of practicals/week)

FIS 314: FISH ADAPTATION AND PHYSIOLOGY (2 Units)
The different shapes and adaptive designs in fish in relation to the aquatic environment. Natural environmental adaptation of fish, migration, reproduction, feeding habits, salinity, temperatures and life cycles. Modified environmental behaviour of fish to pressure, light, electrical field and noise. (1 hour of lectures and 3 hours of practicals/week).

FIS 501: FISH PRODUCTION AND MANAGEMENT (2 Units)
Practical aspects of handling and care of fish. Breeding of fish. Production of fingerlings and fries; management of breeders; growers and other types of fish and marine products; buildings and equipment needed in a fish farm; procurement of feed and systems of feeding. Harvesting and marketing. Appraisal of management structure and effectiveness of fisheries management policies. Preparation of management plan for fisheries project.

FIS 503: PRODUCTION OF OTHER MARINE PRODUCTS (2 Units)
Ecology, life histories of crustacea and aquatic mollusk culture of shrimps, oysters; crabs, crayfish, lobster, cockles, periwinkles, marine gastropods, frogs, edible sea weeds and fresh water plants. Deep sea and shore farming of some products. Processing and preservation of marine products. (1 hour of lectures and 3 hours of practical/week).

FIS 505: ORNAMENTAL FISHERIES AND AQUARIA DESIGN (2 Units)
Ornamental fish breeding, management and nutrition; design and maintenance of various aquaria.

FIS 507: FISH POPULATION DYNAMICS (2 Units)
Fishing effort and catch per unit effort. Population estimation, age and growth; natality and mortality. Computation of yields from given recruitment. Stock assessment.

FIS 509: FISH FARMING (2 Units)
General surveying, site selection: Fresh water and brackish water pond construction. Design and construction of dykes, sluice gates, drainage facilities, tanks, ponds, pens, cages, rafts and other types of fish rearing facilities, design of inland fish farms,

pumping stations and fish hatcheries.

FIS 511: ADMINISTRATION AND PROGRAMME PLANNING IN EXTENSION (2 Units)
Concepts, theories, principles and guideline of administration, organization, supervision as applied to extension; importance of programme planning in extension. Principles and concepts of programme planning in agricultural extension need, educative objective, learning experience, clientele participation, plan of work, calendar of work. The role of good public relations, good leadership and cooperation for an extension worker. Associations and cooperatives; concepts of evaluation applied to agricultural extension programmes.

FIS 597: SEMINAR (2 Units)
Each student will be required to give a seminar in the final year and participation in all departmental seminars.

FIS 502: FISHERY TECHNOLOGY, PROCESSING AND STORAGE (2 Units)
Post-harvest spoilage; principles and methods of preservation, packaging, storage, product evaluation and quality control. Estimation of nutrients in fish flesh. Traditional versus modern preservation techniques.

FIS 504: FISH NUTRITION (2 Units)
Principles of fish nutrition. Requirements for energy, protein, vitamins and minerals, and non-nutrient components; feed computation and formulation methods; the fish feed industry; feed pelleting; fish feed habits; feed evaluation; practical considerations in fish feed. Feed formulation, feed mixing and manufacture of feed on commercial scale.

FIS 506: FISH ECONOMICS (2 Units)
Major economic constraints in fishery development; free access fishery, sustainable yield curve and total revenue curve. Bionomic equilibrium, factor rents, welfare economic theory and its relevance for fisheries; externalities in fisheries; capital investment and depreciation of equipment; consumer and consumption patterns; fishery resources and right of ownership.

FIS 508: ADVANCED FISHERIES MICROBIOLOGY AND PATHOLOGY (2 Units)
Morphological and biochemical methods of identification of fish parasites, bacteria and viruses. Sensitivity test control and therapy.

FIS 510: FARM MANAGEMENT AND FISHERY BUSINESS MANAGEMENT (2 Units)
Fish farm planning and organization; farm budgeting; farm growth, problems of organizing and managing fish farms under commercial and peasant systems. The

scope of fishery business and management, types of business management; types of credit extended to fish farming; sources of credits and loans; marketing arrangement; fish farm record and accounting; financial management.

FIS 512: FISHERIES POLICY AND LEGISLATION (2 Units)
Fisheries Institution, Conservation strategies. Fisheries Policy and laws of Nigeria. International Laws of the Sea.

FIS 514: MARINE AND BRACKISH WATER ECONOMIC RESOURCES (2Units)
Study of major marine and brackish water fin and shell fish species in relation to their development for culture, food and industrial uses. Methods of harvesting e.g. electro-fishing

FIS 599: PROJECT (4 Units)
Each student is required to choose and execute a special project under supervision. Duration of the project is two semesters.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND TOXICOLOGY

Preamble

The Department of Environmental Management and Toxicology, being the first of its kind in Nigeria, was established in 1989 to provide skilled manpower trained specifically for environmental surveillance, monitoring and management as against the present practice where these tasks were performed by people trained in basic and applied sciences.

The academic programme in the Department is designed to provide the training needed for an understanding of the environment and to build upon this foundation by exploring in some depths, specific aspects such as resource depletion, recycling, re-use and the impact of science and technology on the environment.

The Department has trained about six hundred students to date. Many of the students are working in government establishments, industries and others have gone for their post graduate programmes at home and abroad.

The programme ranks among the most sought-for in the University because of increased public awareness to environmental matters. There is also increased collaboration between the Department and Environmental related Agencies such as FEPA, OGEPA and other non-governmental organizations.

Philosophy

The philosophy of the programme is the training of personnel from a wide range of disciplines and backgrounds, to the highest academic standards in the identification and resolution of environmental issues.

Objectives

1. To train well-equipped personnel to meet the challenge of the environment.
2. To produce highest quality research and teaching.
3. To give sound advice on environmental matters.

The academic programme in the Department of Environmental Resources Management and Toxicology is designed to provide the training needed for an understanding of the environment and to build upon this foundation by exploring in some depths, specific aspects such as resource depletion recycling, re-use and the impact of Science and Technology on the environment.

The programme is designed such that a graduate of the Department will be well equipped to meet the challenges of the environment and it is hoped that such graduates will constitute the work force for the government's Environmental Protection Programme. The programme will run for duration of five years out of which the second semester of the fourth year will be spent in relevant Industrial/ Employment attachments.

Academic Staff

Name	Qualification	Specialization	Designation
O. H. Adedeji	B. Sc. (Lagos), M. Sc., PhD (Ibadan), PGD (ITC, Twente, the Netherlands)	Physical Geography and Geospatial Techniques for Natural Resources Management	Senior Lecturer & Ag. Head of Department
T. A. Arowolo	B. Sc. (London), M. Sc. (Loughborough) PhD (Aberdeen)	Analytical/Environmental Chemistry	Professor
O. Bamgbose	B. Sc., M. Sc., PhD (Ibadan)	Analytical/Environmental Chemistry	Professor
C. O. Adeofun	B. Sc., M. Sc., PhD (Ibadan)	Environmental Remote Sensing	Professor
A. M. Gbadebo	B. Sc (Port-Harcourt), M.Sc (Ife), PhD (Ibadan), PGD(Israel)	Environmental Geochemistry	Professor
O. Oguntoke	B. Sc., M. Sc., PhD (Ibadan)	Environmental Health/ Env. Impact Assessment/Medical Geography	Senior Lecturer
Olufunmilayo O. Olayinka	B. Sc. (Ado Ekiti), M. Sc., PhD (Ibadan)	Analytical /Environmental Chemistry	Reader
B. S. Bada	B. Agric, M. Sc (Ife), PGC (Tokyo), PhD (Ibadan)	Environmental Soil Science	Senior Lecturer
Z. O. Ojekunle	B. Sc (Ife), M. Sc;Ph.D (Tianjin)	Urban Planning/Water and Environmental Management	Senior Lecturer
O. O. Olujimi	B. EMT (Abeokuta), M.Sc. (Nottingham, D. Tech. (CapeTown)	Environmental Pollution Monitoring and Health Risk Assessment	Senior Lecturer
A. M. Taiwo	B.EMT, MEMP. (Abeokuta), Ph.D (Birmingham)	Environmental Health & Risk Management (Air and Water)	Lecturer I
Amudalat K. Olatunde	B.EMT, MEMP. (Abeokuta), Ph.D (Reading)	Environmental Management & Toxicology	Lecturer I
.Funmilola F. Oyebanji	B.EMT, MEMP. (Abeokuta)	Environmental Management & Toxicology	Lecturer II
M. B. Adekola	B.Sc. (Akungba), MSc (Ife)	Biochemistry (Toxicology)	Assistant Lecturer

	3 Years Programme	4 Years Programme	5 Years Progrmme
University Compulsory Courses			
(I) General Studies	-	5	10
(ii) Other Compusory Courses (CPP201, APH202, PHS364)	1	7	7
(iii) 100 Level Courses	-	-	33
Core Courses			
200 Level	-	23	23
300 Level	35	35	35
400 Level	18	18	18
500 Level	30	30	30
Industrial training	16	16	16
ELECTIVES	**10**	**10**	**10**
TOTAL	**110**	**144**	**182**

100 Level: First Semester

Course Code	Course Title	U	L	T	P
Compulsory Courses					
BIO 101	General Biology I	2	2	-	-
BIO 103	Introductory Physiology I	2	2	-	-
BIO 191	Practical Biology I	1	-	-	1
CHM 101	Introductory Physical Chemistry I	3	3	-	-
CHM 191	Practical Chemistry I	1	-	-	1
PHS 105	General Physics for Non-Major	3	3	-	-
PHS 191	Physics Laboratory I	1	-	-	1
EMT 101	Introduction to Practical Geography	3	2	1	-
MTS 105	Mathematics for Non-Major	3	2	1	
Total		**19**	**14**	**2**	**3**

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
AEM 102	Principles of Economics	2	2	-	-
BIO 102	General Biology II	2	2	-	-
CHM 102	Introductory Organic Chemistry	2	2	-	-
CHM 104	Introductory Inorganic Chemistry	2	2	-	-
CHM 192	Practical Chemistry II	1	-	-	1
GNS 101	Use of English	2	2	-	-
GNS 102	Introduction to Nigerian History	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
MTS 106	Mathematics for Non-Major	3	2	1	-
PHS 106	General Physics II for Non-Major	3	3	-	-
EMT 102	Introduction to Physical Geography and Meteorology	2	1	-	1
EMT 104	Introduction to Environmental Sciences I	1	-	-	1
	Total	**22**	**18**	**1**	**3**

200 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 201	General Ecology	2	1	-	1
BCH 201	General Biochemistry I	3	2	-	1
CSC 201	Introduction to Computer Science	3	2	-	1
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 203	Use of Library	1	1	-	-
CHM 211	Inorganic Chemistry I	2	2	-	-
CHM 221	Basic Organic Chemistry I	2	2	-	-
CHM 231	Physical Chemistry I	2	2	-	-
PCP 201	Principles of Crop Production	3	2	-	1
EMT 201	Introduction to Environmental Science I	2	2	-	-
	Total	**21**	**17**	**-**	**4**

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
BOT 208	General Plant Physiology	2	1	-	1
CHM 212	Basic Inorganic Chemistry II	2	2	-	-
CHN 222	Basic Organic Chemistry II	2	2	-	-
CHM 232	Basic Physical Chemistry II	2	2	-	-
CHM 292	Experimental Chemistry II	1	-	-	1
APH 202	Introduction to Animal Production	2	1	-	1
EMT 202	Methods In Environmental Analysis I	3	3	-	-
EMT 204	Economic Geography	2	2	-	-
EMT 206	Introduction to Rural and Urban Regional Planning	2	2	-	-
ETS 206	Entrepreneurship Studies and Changes Mgt.	2	2	-	-
GNS 202	Elements of Politics and Government	1	1	-	-
	Elective	2	2	-	-
	Total	**23**	**20**	**-**	**3**
Electives					
WMA 202	Introductory Climatology and Biogeography	3	2	-	1
WMA 204	Elements of Hydrology	2	2	-	-
FIS 310	Oceanography	2	1	-	1

300 Level: First Semester

Course Code	Course Title	U	L	T	P
EMT 301	Principles of Natural Resources Management	2	2	-	-
EMT 303	Methods of Environmental Analysis II	2	1	-	1
EMT 307	Environmental Pollution Studies	2	2	-	-
EMT 309	Environmental Geosciences I	3	2	-	1
FST 305	General Microbiology	3	2	-	1
FWM 315	Remote Sensing and Mapping Techniques	3	2	-	1
STS 201	Statistics for Agricultural & Biological Sciences	3	2	-	1
EMT 305	Metals and the Environment	2	2	-	-
*BCH 307	Metabolism of Nucleic Acids	2	2	-	-
ETS 206	Electives for Management Options Only	4	4	-	-
	Total	**26**	**21**	**-**	**5**
Electives					
WMA 307	Water Resources of Nigeria	2	2	-	-
WMA 309	Agro-meteorology I	3	2	-	1
MCB 211	Introductory Biotechnology	2	2	-	-

*Compulsory for Environmental Toxicology Option Only

300 Level: Second Semester

Course Code	Course Title	U	L	T	P
EMT 302	Environment Ecosystem and Management	2	1	-	1
EMT 304	Hazardous Substance and Management	3	2	-	1
EMT 306	Environmental Impact Assessment	3	2	-	1
EMT 308	Air Analysis	1	-	-	1
EMT 310	Entrepreneurial Studies	2	2	-	-
PHS 364	Energy and Environment	1	1	-	-
SOS 322	Soil Chemistry and Soil Microbiology	2	1	-	1
EMT 316	Water Quality Assessment and Pollution Control	2	2	-	-
#EMT 312	Environmental Aspects of Pesticides and other Toxicants Usage	3	2	-	1
	Elective	4	4	-	-
	Total	**19**	**13**	**-**	**6**
Electives					
FWM 304	Aerial and Ground Survey	3	2	-	1
#BCH 310	Introductory Toxicology	3	3	-	-
FMW 306	Wildlife Ecology and Management	3	2	-	1
*EMT 314	Landscape Studies and Planning	3	2	-	1
MCB 302	Microbial Genetics and Molecular Biology	3	2	-	1

Compulsory for Environmental Toxicology Option Only

* Compulsory for Environmental Management Option Only

400 Level: First Semester (Environmental Management Option)

Course Code	Course Title	U	L	T	P
EMT 401	Environmental Monitoring System and Techniques	3	2	-	1
EMT 403	Environmental Aspect of Farming System	3	2	-	1
EMT 405	Environmental Education and Awareness	2	2	-	-
EMT 409	Soil Analysis	1	-	-	1
EMT 411	Water Analysis	1	-	-	1
EMT 413	Experimental Pesticides Chemistry and Residue Analysis	1	-	-	1
EMT 415	Entrepreneurial Studies in Environmental Mgt.	2	2	-	-
EMT 417	Scientific Writing and Research Methodology	2	2	-	-
EMT 421	Human Environment	2	2	-	-
EMT 423	Environmental Auditing	2	2	-	-
EMT 425	Rural and Urban Regional Planning	2	2	-	-
	Elective	2	2	-	-
	Total	**23**	**18**	**-**	**5**
Electives					
EMT 427	Remote Sensing and GIS	2	1	-	1
EMT 429	Integrated Resources Management	2	2	-	-

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
EMT 402	Industrial Training Practical	6	-	-	6
EMT 404	Industrial Training Field Assessment	4	-	-	4
EMT 406	Industrial Training Report	4	-	-	4
EMT 408	Industrial Training Seminar	2	-	-	2
	Total	**16**	**-**	**-**	**16**

400 LEVEL: First Semester (Environmental Toxicology Option)

Course Code	Course Title	U	L	T	P
EMT 401	Environmental Monitoring System and Techniques	3	2	-	1
EMT 403	Environmental Aspect of Farming System	3	2	-	1
EMT 405	Environmental Education and Awareness	2	2	-	-
EMT 407	Principles of Toxicology I	3	2	-	1
EMT 409	Soil Analysis	1	-	-	1
EMT 411	Water Analysis	1	-	-	1
EMT 413	Experimental Pesticides Chemistry and Residue Analysis	1	-	-	1
EMT 415	Entrepreneurial Studies in Environmental Mgt.	2	2	-	-
EMT 417	Scientific Writing and Research Methodology	2	2	-	-
MCB 405	Environmental Microbiology	3	2	-	1
	Elective	2	2	-	-
	Total	**23**	**16**	**-**	**7**
Electives					
WMA 201	Introductory Meteorology	3	2	1	-
CHM 413	Radionuclide Chemistry	2	2	-	-
EMT 427	Remote Sensing and GIS	2	1	-	1

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
EMT 402	Industrial Training Practical	6	-	-	6
EMT 404	Industrial Training Field Assessment	4	-	-	4
EMT 406	Industrial Training Report	4	-	-	4
EMT 408	Industrial Training Seminar	2	-	-	2
	Total	**16**	**-**	**-**	**16**

500 LEVEL: First Semester (Environmental Management Option)

Course Code	Course Title	U	L	T	P
EMT 501	Environmental Law	2	2	-	-
EMT 511	Ecological Disasters and Control	3	2	-	1
EMT 513	Environmental Biotechnology	2	2	-	-
EMT 517	Environmental Health and Safety Management	3	2	-	1
EMT 521	Environment and Poverty	3	2	-	1
EMT 597	Seminar I	1	-	-	1
	Elective	2	2	-	-
	Total	**16**	**12**	**-**	**4**
Electives					
FWM 505	Forestry and Wildlife Policy, Law and Administration	2	2	-	-
WMA 401	Principles of Soil and Water Conservation	2	2	-	-

500 LEVEL: Second Semester

Course Code	Course Title	U	L	T	P
EMT 504	Waste Management	3	2	-	1
EMT 506	Human Settlement and Development	3	2	-	1
EMT 512	Petroleum and Environment	3	2	-	1
EMT 520	Conservation of Biological Diversity	3	3	-	-
EMT 599	Project	4	-	-	4
	Elective	3	3	-	-
	Total	**19**	**12**	**-**	**7**
Electives					
EMT 510	Environment and Community Health	3	3	-	-
EMT 522	Tourism and Recreaton	3	3	-	-

500 LEVEL: First Semester (Environmental Toxicology Option)

Course Code	Course Title	U	L	T	P
EMT 501	Environmental Law	2	2	-	-
EMT 503	Principles of Toxicology II	2	2	-	-
EMT 505	Principles of Analysis of Toxicants	3	2	-	1
EMT 509	Structural Elucidation of Organic Pollutant	3	2	-	1
EMT 513	Environmental Biotechnology	2	2	-	-
EMT 515	Radionuclides in the Environment	2	2	-	-
EMT 597	Seminar I	1	-	-	1
	Elective	2	2	-	-
	Total	**17**	**14**	**-**	**3**
Electives					
EMT 511	Ecological Disasters and Control	3	2	-	1
EMT 517	Environmental Health and Safety Management	3	2	-	1
WMA 401	Principles of Soil and Water Conservation	2	2	-	-

500 LEVEL: Second Semester

Course Code	Course Title	U	L	T	P
EMT 504	Waste Management	3	2	-	1
EMT 512	Petroleum and Environment	3	2	-	1
EMT 514	Miscellaneous Techniques in Environmental Analysis	2	2	-	-
EMT 516	Separation Techniques in Environmental Analysis	2	1	-	1
EMT 518	Methods in Environmental Analysis III	2	1	-	1
EMT 598	Seminar II	1	-	-	1
EMT 599	Project	4	-	-	4
	Elective	3	3	-	-
	Total	**20**	**11**	**-**	**9**
Electives					
EMT 506	Human Settlement and Development	3	2	-	1
EMT 510	Environment and Community Health	3	3	-	-
EMT 520	Conservation of Biological Diversites	2	3	-	-
EMT 522	Tourism and Recreaton	3	3	-	-

* Compulsory for Environmental Management Option Only

\# Compulsory for Environmental Toxicology Option Only

COURSE SYNOPSES

EMT 101: INTRODUCTION TO PRACTICAL GEOGRAPHY (2 Units)

This course is designed to provide practical knowledge and skills in map reading, assimilation, interpretation and analysis. It introduces the students through lectures and both indoor and outdoor labs, to the fundamental concepts (e.g. what is a map, types of maps, map scale and distance, map projection, map symbols), and techniques

(e.g. using compass and global positioning system GPS) of map use (i.e. reading map, analysis and interpretation) using different types of maps (topographical and small scale maps). It also touches on morphometric and drainage system analysis and the analysis of human features.

EMT 102: INTRODUCTION TO PHYSICAL GEOGRAPHY AND METEOROLOGY(2 Units)
An introduction to the science of physical geography with the earth system approach. The course examines the spatial patterns and interrelationships among physical elements at the earth surface. It explores the physical structure of the earth, considers the atmosphere, origin, vertical division and composition and its circulation. It outlines the main processes that shape the earth surface over time and space. Specific arrears include weather and space, nature and scope, rocks, weathering and mass wasting, slopes, introduction to soils, vegetation (world biomes, types and distributions). The course highlights some of the basic interaction between human activity and the natural environment, discussing current issues of global warming, climate change and other critical environmental issues.

EMT 104: INTRODUCTION TO ENVIRONMENTAL SCIENCES I (1 Units)
Concept of the environment, structure of the environment, origin and growth of settlements, factors affecting sitting and development of villages and cities, land tenure systems, impact of urbanization on natural resources, socio ecological problems and concerns, the underlying causes of environmental degradation, conservation vs preservation , current environmental issues.

EMT 201: ENVIRONMENTAL SCIENCES I (2 Units)
Components of the environmental - Air, water, soil, social, Ecosystems-aquatic and terrestrial. Impacts of human activities on the different environmental component, Indices of environmental pollution. General introduction (i) Definition (ii) Essence of planning (iii) History and its relevance. Evolution of historical and legislature contexts of town planning from ancient to modern times. Emergence , growth and decline of settlements as a reflection of changing social, educational, political and physical factors. Survey of human settlements. The effect of philanthropic movement of towns. Planning and public health laws. Urban and regional planning thoughts in Europe, America and Africa. Influence of 19^{th} and 20^{th} century concepts on modern urban planning. case studies of historic cities like Ibadan, Kano, Sokoto, Benin, Ife, Oyo and Lagos.

EMT 202: METHODS IN ENVIRONMENTAL ANALYSIS I (3 Units)
Review of Fundamental Concepts**:-**What is Environmental Analysis, Importance of Environmental Analysis, Classification of. Units of Concentration. Preparation of Standard Solutions. Statistical Treatment of Analytical Data**:** Accuracy, Precision, Errors, Mean, Standard Deviation, Reliability of an average value (t – test), F –

test, Rejection of outliers (Q test and 4Q test). Analysis of variance (ANOVA) Sampling, Techniques, Graph plotting (Centroid method/Least square). Gravimetric Analysis. Types – Evolution, Loss in Ignition, Gas absorption, Thermogravimetry, Electrogravimetry, Precipitation from Solution (Conditions for Analytical Precipitation, Digestion, Filteration, Handling of Precipitates, Co-precipitation), Calculations. Acid Base Titrimetry. Primary Standards, Indicators, Titration Curves, Application. Fundamental Principle of Calculation in Titrimetry. Non Aqueous Titration: Definition of (Arrhenius, Bronsted Lowry, Lewis, General Solvent), standards. Precipitation Titrimetry: Titration Curves, Indicators in precipitation titration (Mohrs, Volhard): Complexometric Titration: Types of Complexing agents, Important feature of EDTA, Masking and Demasking, Complexometric Indicators, Titration methods with EDTA. Oxidation reduction: Titrimetry. Concept of oxidation & Reduction, Oxidation States, Balancing of Redox reactions. Standard electrode potentials. Relationship between Concentration and Potential End Point Detection (Self, Specific and True Oxidation. Red Indicators) Application

EMT 204: ECONOMIC GEOGRAPHY (2 Units)

The course introduces students to the principles of spatial location, distribution of economic activity in space. The focus will range from local to global aim at fostering an analytical understanding of the forces molding he spatial structure of economic activities. Emphasis will be place on global factors. The student will be introduced to different approaches developed by social scientist to study the spatial organization of economic activities. Concepts and models of economic geography. Development, spatial interaction, transportation, economic functions of urban places and industrial location.

EMT 301: PRINCIPLES OF NATURAL RESOURCES MANAGEMENT (2 Units)

Natural resources types and origin, environment, resource and development; rational use of resources and concept of sustainable development. Management of forests, grazing, lands, soils foods, minerals, etc. Community resource development, population and pressure on resource utilization, administration and management of natural resource in Nigeria. Resource economics and management. Environmental conservation – Protection of nature and conservation of species. Conservation of agricultural landscape. Case studies concerned with concepts of balanced approach to natural resources management. Development of planning and management principles of natural resources and ecosystem subject to increasing development processes.

EMT 302: ENVIRONMENT, ECOSYSTEM AND MANAGEMENT (2 Units)

Population, community, ecosystem, environment, and environmental factors. Study of communities and ecosystem, abundance, density, yield, cover, frequency. The

ecology of niche, niche, overlap competition coexistence, resource shifts. Habitats: The primary terrestrial and aquatic habitats which affect man. Alteration imposed on the habitats by man. Integration of ecology and environment into development planning. Ecological management. Eco-development and integrated development. Environmental planning principles – inter-disciplinary not multidisciplinary, holistic, comprehensive, participative coordinated, integrated and continuous planning.

EMT 303: METHODS OF ENVIRONMENTAL ANALYSIS II (3 Units)

Ultraviolet and Visual Absorption Spectrophotometry: Principles of ultraviolet and visual absorption spectrophotometry. Basic principles of the instrument and techniques. Sample preparation Solvents, concentration and dilutions Solid sample. Infrared spectrophotometry: Theory, Basic principles of the instrument and techniques sample preparation: solutions, liquids and merits, solid and gas Qualitative and quantitative application. Photometric Titrations: General discussion, Apparatus and techniques used. Flame Photometry: Principle, instrumentation, Advantages of the method, Limitations of the method, Elimination of interference effects, Elements determinable, Standards and their preparation, Typical determinations. Polarimetry: Principle, Equipment (a typical automatic recording) Polarimeter (should be described), Typical determinations, Optical Rotatory Dispersion

EMT 304: HAZARDOUS SUBSTANCES MANAGEMENT (3 Units)

The nature, origin and classification of hazardous toxic substances. Characteristics of wastes and hazardous substance. Identification of hazardous substances. Sources and pathways of hazardous substances. Disposal methods and technology of hazardous substance. Geological Environmental factors affecting choice of disposal site; contamination of water bearing strata; soil, plants, food webs and bio-concentration. Analysis of hazardous and toxic substances. Regulations and law governing the sale, importation, transportation, storage and disposal of hazardous and toxic substances.

EMT 305: METALS AND THE ENVIRONMENT (2 Units)

Origin Of Metals. Classification of metals. Utilization of metals in industries. Sources of metal pollution; geological weathering, industrial discharge, metals fabricating and furnishing, leaching of metals from garbage, agricultural waste products. Effect of metals on the environment sediment, waste, air and food. Adverse effect of heavy metals – poisoning effects of Ph. Cd. Zn and Hg. Other effects e.g. neurologic, and renal effects. Analysis of metals in environmental samples.

EMT 306: ENVIRONMENTAL IMPACT ASSESSMENT (3 Units)

Introduction on Development and the Environment; Impact of Human Activities on the Environment; The Way Out; E.I.A. Principles and Basics Concepts; Definition of

Environmental Impact; Evolution of E.I.A. Concept; Stages involved in E.I.A. Process; Perception and E.I.A.; The Practice and Procedure of E.I.A.; Difficulties facing environmental Management; Environmental Impact Assessment (E.I.A.) – Methods and Applications; Plan of the Paper; Overview of Types of E.I.A. tasks or activities; Scoping; Identification; Impact Prediction; Impact Evaluation; an Overview of Impact Assessment Methods; Limitations and Applications of E.I.A. in Nigeria; An Approach to Environmental Auditing; Audit Types; Audit Team; Scheduling of Audits.

EMT 307: ENVIRONMENTAL POLLUTION STUDIES (2 Units)

The environment and its interaction concept of elementary cycles, characteristics of the atmosphere , types and effects of environmental pollution. Land pollution and methods of waste disposal. Air pollution and its effects on man, plants and materials. Water pollution and treatment of waste waters, Nuclear pollution, Noise pollution and Global environmental problems, greenhouse effect, global warming, Ozone layer depletion, Nuclear winter, Acid rain.

EMT 308: AIR ANALYSIS (1 Unit)

Sampling and analysis of air pollutants

EMT 309: ENVIRONMENTAL GEOSCIENCES I (3 Units)

Concepts of planetary systems and different spheres (i.e. Lithosphere, hydrosphere, Atmosphere, Biosphere etc), Basic knowledge in mineral concept and rock formation, rock types, weathering phenomenon and soil formation, Mineral resources classification and uses. The non-venerability nature of mineral resources. Exploration and exploitation of mineral resources (solid metallic minerals, liquid oil and water and gases) and their attendant environmental consequences, Basic knowledge in natural hazards and manmade hazards, Basic acknowledge in trace metal and health diseases commonly associated with different geological environment (e.g dental fluorosis, iodine deficiency and selenium deficiency syndrome, Arsenic related problems), Fundamental knowledge in environmental geosciences mapping techniques

EMT 310: ENTREPRENEURIAL STUDIES (2 Units)

Business Environment, Concept and Planning, Government Policies and Incentives to Small business, Socio-economic importance of small Business. Interrelationship Between Business and its environment, Legal forms of Business in Nigeria, How to Generate business ideas. Introduction to Business plan. Identification of venture capital opportunities.

EMT 312: ENVIRONMENTAL ASPECTS OF PESTICIDES AND OTHER TOXICANTS USAGE (2 Units)

Movement and absorption of pesticides in soil. Factors affecting mobility of pesticides and other toxicants in the soil. Soil Herbicide interaction and herbicide efficacy. Fumigant action and systematic activity. Pesticide conversion mechanisms in the

environment. Enzymic and non-enzymic conversion, degradation of pesticides and other toxicants in soil, water, plants and in animals. Pesticides in food chains. Detection/determination and management of toxic wastes in the environment, sanitary fundamentals of pesticides application, safely measures in storage, dispensing, transportation and use of pesticides, disposal of pesticide containers and wastes ecological and environmental health effects. Environmental criteria standards, regulations on pesticide use. Case studies of global disasters of misuse and abuse of pesticides.

EMT 314: LANDSCAPE STUDIES AND PLANNING (3 Units)

Concepts in landscape planning and design. Basic elements of landscape. Landscape design goals, processes and analytical methods. Climate and other environmental factors in landscape design. Landscape evaluation techniques. Site selection and site planning. Principles and factors of site selection (drainage and utility layout; environmental factors, climatological considerations, orientation of buildings, daylight and sunlight). The site plan: scale, circulation, building lines, plot coverage and drainage. Typology of humanized landscape (housing).Landscape design techniques. Management of landscape and their Environmental impacts.

EMT 401: ENVIRONMENTAL MONITORING SYSTEM AND TECHNIQUES (3 Units)

Definition, general principles of environmental monitoring. Organization of monitoring programs for site and resource specific strategies. Classification of monitoring techniques and use (physical, chemical, biological radioactive) global sources, sinks and transport (mass balance) of both man-made and natural atmospheric trace components. Ocean-atmosphere interactions, reversible effect of human activities on the global environment e.g. greenhouse effect, climate change, depletion of stratosphere ozone layer, acid rain. Air pollution meteorology, chemistry and biology. Atmosphere dispersion models. Elements of air pollution control. Sampling and air monitoring techniques. Mechanism of pollutant interaction with soil and vegetation. General principles of bio-testing, aquatic toxicity, types, bio, assays, data analysis and interpretation. Pre-requisite CHM 305.

EMT 402: INDUSTRIAL TRAINING PRACTICAL (6 Units)

Practical experience in Environmental Management and Toxicology procedures. Exposure to water quality analysis and waste treatment processes, determination of toxic metal and organic contaminants in soil and plants, air pollution monitoring and analysis. Practical exposure to standard chemical/environmental procedures in sample collection, storage, preservation, sample clean-up and isolation such as solvent extraction, chromatographic techniques. Exposure to the use of spectroscopic tools (infra-red and UV-visible, atomic absorption spectroscopy), titration for both qualitative and quantitative determinations of environmental pollutant. Exposure to industrial quality control questionnaires and statistical tools in data collection,

utilization of structures questionnaires and statistical tools in data collection, analysis and interpretation. Practical exposure to solid water management strategies.

EMT 403: ENVIRONMENTAL ASPECTS OF FARMING SYSTEM (3 Units)

Farm systems and farming systems, .The relevance of the farm-system approach, Classification of farming systems, Difficulties of farming systems, Problems and peculiarities of shifting cultivation. Characteristics and problems of permanent upland cultivation, Irrigation farming, Environmental and health implication of irrigation, Perennial crop farming, Ranching, Institutional and environmental requirements of site related systems.

EMT 404: INDUSTRIAL TRAINING FIELD ASSESSMENT (4 Units)

Departmental Industrial Training induction courses, daily report (logbook), evidence of active participation, attendance and attestation of official field supervision.

EMT 405: ENVIRONMENTAL EDUCATION AND AWARENESS (2 Units)

Population and environment (responsible use).Role of educational intervention in environmental action. Methods of dissemination of environmental information; case studies of information to various target groups. Methods of public opinion assessment. Social theory for environmental psychology, ecological, psychology theory of participation, social response to environmental pollution, environmental damage and compensation.

EMT 406: INDUSTRIAL TRAINING REPORTS (4 Units)

Detail report of field and Laboratory work done during the Industrial attachment.

EMT 407: PRINCIPLES OF TOXICOLOGY I (3 Units)

History of toxicology, biochemistry cellular and molecular toxicology. Biotoxins, carcinogenesis, tertratogenesis and mutagenesis/genetic toxicology, biotransformation of toxicants. Systematic toxicology, toxic responses of blood, liver, kidney, respiratory systems, central nervous systems, skin, reproductive systems, eye and the immune systems.

Practicals: Demonstration to topical application contract tests, systemic activity of pesticides. Acetycholinesterases inhibition in insects in VICO and in VITRO. Inhibition of egg hatch in nematodes and chitin deposition in insects. Resistance tests in insects. Probit analysis. Effect of gamma irradiation on insect development studies. Effect of morphogenic agents on larval and pupa development in insects. Auto radiographic studies. Bioassay of resistant/susceptible strains of insects, audiovisuals. Pre-requisite EMT 303

EMT 408: INDUSTRIAL TRAINING SEMINAR (2Units)

A brief written and oral presentation practical experience during the Industrial

Training

EMT: 409: SOIL ANALYSIS (1 Unit)

Sampling and physico-chemical analysis of soils (including analysis of several pollutants in soils)

EMT 411: WATER ANALYSIS (1 Unit)

Sampling and analysis of water for various biological and physico-chemical water quality parameters: pH, hardness, alkalinity, chlolride, phosphate, nature, ammonia, sulphate, sulphide, sulphite, fecal bacteria, etc. Determination of dissolved oxygen (D.O), chemical oxygen demand (COD), biochemical (BOD) dissolved and suspended solids, conductivity, turbidity, temperature, Pre-requisite WMA 318.

EMT 413: EXPERIMENTAL PESTICIDE CHEMISTRY AND RESIDUE ANALYSIS (1 Unit)

Sampling, planning the sampling programme, sample containers, collection of various environmental samples – water solid sediments, vegetation, blood, milk, fish, invertebrates birds, mammals, air etc. Extraction and clean-up methods, instrumentation for pesticide analysis, use of gas chromatograph for determination of pesticide residues. Analytical quality assurance; recovery and precision studies. Pesticide formulation analysis. Experimental designs and field/greenhouse trials on effect of pesticide on (a) growth and yield of crops (b) control of pests and diseases. (c) insects resistance of probit analysis. Screening of Nigerian herbs for pesticidal activities. Isolation and characterization of active ingredients in Nigerian herbs, Maintenance, trouble shooting and calibration of instruments.

EMT 415: ENTREPRENEURIAL STUDIES IN ENVIRONMENTAL MANAGEMENT (2 Units)

Project planning and Appraisal, Finance Management: Techniques of book keeping, Financial Statement Balance Sheets, Budgetary control payroll, financial control, Validation and Control of Accounts. Marketing Management, General management Technique, Decision making process, Time and Labour management, Delegation, Supervision and cooperation in Business, team Building, project Monitoring and Evaluation function for small Enterprises Monitoring and Evaluation Indicators for small enterprises, Financial, Data analysis, Interpretation and Management.

EMT 417: SCIENTIFIC WRITING AND RESEARCH METHODOLOGY (2 Units)

Scientific writing reasons for writing manuscripts research papers and project proposals

Scientific illustrations – Tables, graphs, flow chart, organizational charts, computer graphics, photographs, Literature resources, Scientific communication. Types of written communication journals, bulletins, abstracts etc. Types of oral communication, seminar, conferences, talk, art of oral presentation. Scientific writing, Library use and bibliographic search in the Environmental Mgt. &Toxicology and

related areas. Modern information technologies (Information), scientific networking computer date-bases. Compact Disc-Read-Only-Memory (CD-ROM) technology, on line information and computer conference, optical discs, scientific illustration (figures, tables, plates). Each student will present oral and written reports for grading based on a survey of the literature on recent developments in an area of current interest in the field of Environmental Mgt. & Toxicology.

EMT 421- HUMAN ENVIRONMENT (2 Units)

Conceptualization of Environment. Constituents of the human environment. Perception and mental map in human decision making. Superstructures created by man in the environment. Outcome of interactions between physical and human environment. Basis of human decision making in the environment. Cases of human misuse of the environment. Theories of human impacts on the environment (ecological models, sustainability model etc).Strategies for minimizing human negative impacts on the environment.

EMT 423: ENVIRONMENTAL AUDITING (2 Units)

Development and the environment. Meaning of Environmental Audit. Elements of defective environmental auditing. Critical factors required in conducting a meaningful environmental audit, Objective of Environmental auditing, Benefits of Environmental auditing, Types of Environmental Audits: cooperate audit, Liability audit, Technical audit, company internal audits, product/audit, energy audit, Environmental management system Audit. Waste Management and emission audits, Scope and frequency of Environmental Audit Regulatory framework. Environmental Auditing process, steps in conducting environmental audit programme, stages of environmental audit process, characteristics of environmental audit programmes Environmental risk assessment and management

EMT 425: RURAL AND URBAN REGIONAL PLANNING (2 Units)

Concept of a region. Theories of regional growth and development: Central Place Theory, Core-periphery Model, Growth Pole Theory, Spatial Equilibrium Model. Strategies of regional planning. Human and environmental impacts on regional development. Criteria for settlement classification (rurality, urbanism).The village as an organic entity. Rural-urban relationship (physical, social and economic structure of a village).Environmental and other constraints of rural development. Rural community development Strategies and relationship with rural planning. Management of urban environmental problems, Institutional arrangement for urban planning (edicts, laws and common rules etc.).Concepts of sustainable urban development, green cities and ecologically healthy cities.

EMT 427: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM (GIS) (2 Units)

Introduction, Basic definitions, Levels of spatial data GIS data sets, Drinking of different

data set, Phases in Geographic information system building, Data input of Data Capture subsystem, Data management subsystem, Data analysis subsystem, Data presentation subsystem, Remote sensing Data as input into GIS, Basic principles involved, sample linkage. GIS as a scientific tool in Environmental management. Concept and components of Geographic Information System. Relevance of GIS in Environmental planning and analysis. Principles of GIS. Spatial data modeling and data representation. Sources, acquisition and management of environmental data. Capturing, extraction, storage and analysis of spatial data for decision making. Relational analysis of environmental phenomenon. Use of GIS softwares for information processing (ArcView, ILWIS, IDRISI etc.)

EMT 429: INTEGRATED RESOURCES MANAGEMENT (2 Units)

Classification of resources, Survey of resources within the ecological regions of Nigeria (Earth Minerals, Water resources, Forest resources, etc.).Current uses and potentials of Nigeria resources. Links between the resources of the Earth, Approaches to resources management concept, Resources utilization and sustainability. Waste minimization in resources utilization. Techniques for resources processing and value-adding.

EMT 501: ENVIRONMENTAL LAW (2 Units)

Basic concept of environmental standard criteria and regulation. Federal environmental laws organisation Regulations and enforcement mechanisms, violations and sanctions. Comparative study of environmental laws in some advance Countries e.g. USA, Canada, Thailand, etc. International Laws and conventions. Pre-requisite EMT 407.

EMT 503: PRINCIPLES OF TOXICOLOGY II (2 Units)

Sources, fate and effects of different toxicants in the environment, pesticides, metals, radiation and radioactive materials, plant and animal toxins, polyhalogenated compounds, hazardous wastes, dusts, asbestos, plastics. Factors that influence toxicity, route of administration, chemical and biological factors. Environmental toxicology, food additives and contaminants, atmospheric, aquatic and soil pollutants. Clinical toxicology, cosmetics and drugs, occupational toxicology and health. Autoradiography. Toxicity testing. Future of toxicology in the developing countries i.e. regulatory and legal requirements.

EMT 504: WASTE MANAGEMENT (3Units)

Types and forms of wastes. Sources of waste. Methods of solid, liquid and gaseous wastes management technology including wastes recycling and utilization. Institutional arrangements for waste management. Environmental health effects of waste management. Economics of wastes management, wastes management strategies. Case studies.

EMT 505: PRINCIPLES OF ANALYSIS OF TOXICANT (3 Units)

Types, nature and characteristics of toxicants, sampling of air, soil, water and other ecological materials particularly using a staplex sampler at different flow rates and other modern methods. Sample preservation and preparation techniques. Samples collection techniques of air, soil, water, food, blood etc. Analytical methods for toxicants. Instrumental neutron. Activation analysis. Atomic absorption spectrophotometer UV/Visible spectrophotometer. Gas chromatograph hybrid methods e.g. GC/Mass spectrometer. Auto-analyzer chemical separation methods. Gas analyzers. Quality assurance of analytical data statistical treatment of data. Interpretation of data.

EMT 506: HUMAN SETTLEMENT AND DEVELOPMENT (3 Units)

Human settlement, Size and density, Factors influencing location, Landscape designs, Parks and reserves, Rural, urban and use and environmental quality, Culture and environment; Patterns, health and safety, Environmental ethnics, Impact of human settlement and development on the environment, Case studies; examples of significant human settlement and developments projects and their environmental impacts.

EMT 509: STRUCTURAL ELUCIDATION OF ORGANIC POLLUTANTS (3 Units)

Structural elucidation of organic pollutants, basic instrumentation and techniques. Applications of UR, IR, NMR and MS in chemical analysis and structural elucidation of organic pollutants.

EMT 510: ENVIRONMENT AND COMMUNITY HEALTH (3 Units)

Definition of concepts in community and public health. Hippocrates viewpoint of community Health. Influence of the Environment and development on community health. Distinction between community/public health in DCs and LDCs. Methods for investigating community / public health problems (John Snow's example of Cholera control).Sources of community / public health problems in rural and urban areas in LDCs. Control of health problems arising from contamination of water, air etc. in communities. Spatial epidemiological approach to community / public health problems analysis. Planning intervention programme for community / public health problems.

EMT 511: ECOLOGICAL DISASTERS AND CONTROL (3 Units)

Ecological consequences of mismanagement of natural resources. Principles and practice of greenbelt establishment in arid coastal areas. Origin causes of erosion forms, factor and mechanism. Erosion forecasting surface water management. Soil hydrology, Soil water movement, Drainage, leaching and water disposal. Economics

and benefits of erosion control. Types flood and the causes, flooding events in urban centres. Erosion/flood control measures, engineering and administrative measures. Deforestation; causes and control. Evapotranspiration versus drought, Desertification and in a changing climate.

EMT 512: PETROLEUM AND ENVIRONMENT (3 Units)

Origin and composition of crude oil, composition of refund oils, extent, sources fate and effects of oil in the environment. Characteristic of biogenic and petrogenic hydrocarbons control of oil pollution. Oil pollution monitoring, sampling, sample containers, extraction, clean-up, identification and quantization, oil tagging. Use of bio-indicators in oil pollution monitoring. Biomarkers.

EMT 513: ENVIRONMENTAL BIOTECHNOLOGY (2 Units)

Definitions and historical development of biotechnology, Genes and genetic engineering. Tools and practice of genetic engineering, Applications of biotechnology (bioremediation, bio-control, bio-fertilizers
Bio-gas, bio-informatics, etc), Socio-economic implications of biotechnology

EMT 514: MISCELLANEOUS TECHNIQUES IN ENVIRONMENTAL ANALYSIS. (2 Units)

Miscellaneous advanced techniques in environmental analysis X-ray methods, neutron activation and radiochemical methods, enzymatic and kinetic methods, automated and process analyzers.

EMT 515: RADIONUCLIDES IN THE ENVIRONMENT (2 Units)

Natural radioactivity, fusion, fission, decay processes, acidity, Nuclear models, energetics of nuclear reactions. Principles and measurement of radioactivity. Application of radioactivity. Radiation hazards. Applications of radioisotopes. Nuclear structure and Nuclear reactions, Decay reactions, kinetics of decay reaction. Bombardment reactions and the growth of radio activity, Analytical use of Radionuclides. Chemical path way studies, Radio isotope dilution Methods, Radio Immunoassay, Radio activation analysis

EMT 516: SEPARATION TECHNIQUES IN ENVIRONMENTAL ANALYSIS (2 Units)

Solvent extraction methods in analysis. Types of separation, distribution coefficient, single batch extraction, continuous bath extraction, Bath processes, Application of solvent extraction. Principles of chromatography theoretical plates, resolution and band spreading paper, thin layer, ion-exchange, column, gel-permeation, GLC, electrophoresis.

EMT 517: Environmental Health and Safety Management (3 Units)

Conception of occupational safety and Health. International labour laws and sundry ethics for ensuring workers' safety. Good housekeeping and equipment maintenance. Sources of environmental hazards in the workplace and exposure. Strategies for

protecting workers. Industrial pollutants affecting communities (dust, effluents, fire etc.).Control of industrial pollutants for community health.

EMT 518: METHODS IN ENVIRONMENTAL ANALYSIS III (2 Units)

Electro-analytical Method: Potentiometry, Reference Electrode – Calomel, Ag/Agcl, Indicator Electrodes-1st, 2nd and 3rd order, Metal Electrodes, Membrane Electrodes – glass electrode, types of Liquid junction potential, Solid State Electrode, Potentiometric titration, End point location in potentiometric titration-visual, plot of E/V, plot of derivative curves 1st& 2nd. Electrogravimetry: Fixed Potential, Constant current, Constant cathode Potential. Coulomery: Constant Electrode Potential, Constant Current Coulometry, Coulometric titration. Voltammetry: Classical polarography, Description of Dropping mercury electrode, Condition for polarographic determination, Qualitative and quantitative Analysis Conductance Methods: Description of Limiting ionic conductance, Conductance Cell, Conductometric titration. Thermal Methods: Thermo-gravimetry, Differential thermal Analysis (DTA).

EMT 519: ENVIRONMENTAL ECONOMICS (2 Units)

Definition of environmental economics, concept of environmental economics, theory of consumer behavior, role of economics in environmental management, environment as a capital, sustainability and sustainable development, population based economic order, societal cost of environmental pollution, economic values of environmental attributes, human population and environment, energy and environment, economic policies and environment, valuation techniques.

EMT 520: CONSERVATION OF BIOLOGICAL DIVERSITY: (3 Units)

Definitions and uses of biodiversity, Levels and types of biological diversity, Strategies for conservation of biological resources –in-situ and ex-situ conservation: types, importance and limitation of both methods, Threats and possible solutions for biodiversity conservation, Biodiversity and climate change, Relationships between Biodiversity, culture and development, Biodiversity and poverty reduction, Indigenous knowledge in biodiversity conservation, Legal and fiscal measures for biodiversity conservation, National organizations, National laws and legislation, International treaties, Measurement of diversity indices and biodiversity similarity indices

EMT 521: ENVIRONMENT AND POVERTY (3 Units)

Concept of absolute and relative poverty. Approaches poverty measurement. Environmental indicators of poverty. Theories of development and under-development in relation to poverty. Poverty and environmental resources utilization and management. Poverty factor in the resolution of local and global environmental issues. Measures for poverty alleviation for environmental conservation.

EMT 522: TOURISM AND RECREATION (3 Units)

Meaning and approaches to tourism. Historical and modern perspectives of tourism and recreation. Environmental aspects of tourism and reaction. Pattern of tourism and recreation in developing countries. Nigeria tourism potentials, their location and factors. Origin and growth of tourism in Nigeria. Fundamentals of tourism planning and development within the Ecological zones in Nigeria. Environmental, economic and social significance of tourism. Environmental consideration in tourism and recreation planning and utilization.

EMT 597: SEMINAR I (1 Units)

The purpose of this course is to familiarize the students with effective use of the library, preparation of project reports, papers for journal publication and journal reviews. Students will be given essays on topics of general interest from widespread areas of environmental management.

EMT 598: SEMINAR II (1 Units)

Post data seminar.

The purpose of this course is to allow the students to present the data collected from their field work.

EMT 599: PROJECT (4 Units)

Investigation of an environmental research problem

DEPARTMENT OF FORESTRY AND WILDLIFE MANAGEMENT

Preamble

The Department of Forestry, Fisheries and Wildlife Management was one of the earliest departments created when the University of Agriculture, Abeokuta came into being in January 1988. On October 1, 1994, the Department of Forestry and Wildlife Management was carved out of the old Forestry, Fisheries and Wildlife Management Department.

The Department specializes and vigorously pursues eight sub-units:

i. Forest Biology and Silviculture
ii. Forest Economics and Management
iii. Biometrics and Remote Sensing
iv. Wood Science
v. Wildlife Management
vi. Wildlife Ecology and Conservation
vii. Wildlife Domestication and Production
viii. Park Interpretation and Wildlife Extension

The Department now runs a 5-year Bachelor's degree programme in Forestry and Wildlife Management. The postgraduate degree programme at Masters and Ph.D. levels started in 1992. The Department thereby, has consolidated the gains of the first degree with the inception of the postgraduate programme.

Philosophy

The primary philosophy that guides the training of students is the production of skilled manpower that is adequately furnished with the comprehensive information required, for engaging in Forestry and Wildlife management in an environment characterized by rural setting and adequate land endowment. Such knowledgeable professional manpower has to be produced in an atmosphere with the widest possible human and material resources, through the adoption of effective techniques of instruction, and exposure to the actual practice of forestry. Consequently, there are opportunities for formal training at the Undergraduate and postgraduate levels for the acquisition of basic and higher degrees respectively.

These training programmes are mounted through classroom instruction, laboratory practical, field demonstration, and workshop practice.

The Objectives of the Programme

(i) To produce graduates with sufficient practical background to create

employment from utilisation of Forest and Wildlife Resources. The graduates are also expected to be able to undertake local sourcing of industrial raw materials, to produce animal protein through demonstration and ranching of farm wildlife and also engage in Food production through Agroforestry.

(ii) To produce the required manpower which will not only be used in staffing Forestry and wildlife establishments nationally but which also would be able to carry out relevant, mission oriented researches into all aspects of Forestry and Wildlife, the yet unexplored benefits and products which can serve as bases for newer industries.

Academic Staff

Name	Qualification	Specialisation	Rank
O. O. Oduntan	B.Sc., M.Sc, Ph.D. (Ibadan)	Wildlife Utilisation and Extension	Reader and Ag. Head of Department
S. A. Onadeko	B.Sc. (Ibadan), M.Sc (Texas), Ph.D. (Ibadan)	Wildlife Ecology /Management and Park Interpretation	Professor
S. A. Oluwalana	B.Sc., M.Sc, Ph.D, (Ibadan), PGD (Dresden)	Forest Economics and Management	Professor
A. M. Aduradola	B.Sc., M.Sc, Ph.D. (Ibadan), Cert.(Viterbo)	Silviculture& Agroforestry	Professor
A. C. Adetogun	B.Sc.,M.Sc,Ph.D(Ibadan)	Wood Utilization and Protection	Professor
M. F. Adekunle	HND (Ibadan) B.Sc., M.F., Ph.D.(Abeokuta)	Forest Economics and Management	Professor
O. A. Jayeola	B.FWM, M.WM, Ph.D. (Abeokuta)	Wildlife Ecology and Conservation	Reader
A. L. A. Shotuyo	B.Sc.,M.Sc,Ph.D(Ibadan)	Wildlife Ecology & Management	Reader
Margaret O. Adedokun	B.Sc. (Akure), M.Sc., Ph.D. (Abeokuta)	Forest Economics and Management	Senior Lecturer
M. O. Oyatogun	B.Sc.,M.Sc,Ph.D.(Ibadan)	Range Management	Senior Lecturer
O. A. Akintunde	B.FWM, M.WM, Ph.D. (Abeokuta)	Wildlife Management	Senior Lecturer
J. A. Soaga	B.Sc. (Ibadan), M.F., Ph.D(Abeokuta)	Forest Economics and Management	Senior Lecturer
I. O. O. Osunsina	B.FWM, M.WM, Ph.D (Abeokuta)	Wildlife Management and Ecology	Senior Lecturer
A. O. Oladoye	B.Sc., M.F., Ph.D (Abeokuta)	Forest Ecology & Conservation	Senior Lecturer
K. M. Ogunjobi	B.FWM, MEMP, Ph.D (Abeokuta)	Wood Science	Lecturer I
M. A. Yisau	B.FWM, M.WM, (Abeokuta), M.Sc. (Edinburg), Ph.D. (Abeokuta)	Conservation Biology	Lecturer I
Juliet A. Yisau	B.Sc., M.F., Ph.D (Abeokuta)	Silviculture	Lecturer II

100 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 101	General Biology I	2	2	-	-
BIO 103	Introductory Physiology I	2	2	-	-
BIO 191	Biology Practical I	1	-	-	1
CHM 101	Introductory Physical Chemistry	3	2	1	-
CHM 191	Practical Chemistry I	1	-	-	1
MTS 105	Mathematics for Non Major	3	2	1	-
PHS 105	General Physics for Non-Major	3	2	1	-
PHS 191	Physics Laboratory I	1	-	-	1
	TOTAL	**16**	**10**	**3**	**3**

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
AEM 102	Principles of Economics	2	2	-	-
BIO 102	General Biology II	2	2	-	-
BIO 192	Biology Practical II	1	-	-	1
CHM 102	Introductory Organic Chemistry	**2**	2	-	-
CHM 104	Introductory Inorganic Chemistry	2	2	-	-
CHM 192	Practical Chemistry II	1	-	-	1
GNS 101	Use of English	2	2	-	-
GNS 102	Introduction to Nigerian History	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
MTS 106	Mathematics for Non-Major 2	3	2	1	-
PHS 106	General Physics for Non-Major	3	3	-	-
PHS 192	Physics Laboratory II	1	-	-	1
	TOTAL	**21**	**17**	**1**	**3**

200 Level: First Semester

Course Code	Course Title	U	L	T	P
ANP 201	Comparative Anatomy and Physiology of Farm Animals	3	2	-	1
SOS 211	Principle of Soil Science	2	2	-	-
FWM 201	Introduction to Forestry and Wildlife Management	2	2	-	-
STS 201	Statistics for Agricultural andBiological Students	3	2	1	-
PCP 201	Principles of Crop Production	3	2	-	1
CSC 201	Introduction to Computer Science	3	2	-	1
FIS 201	Introduction to Fisheries Management	2	2	-	-
AGR 201	General Agriculture	3	2	-	1
FWM 203	Principles of Conservation in Tropical Africa	2	2	-	-
AEM 201	Principles of Agricultural Economics	2	2	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
	TOTAL	**25**	**20**	**1**	**4**

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
WMA 202	Introductory Climatology & Biogeography	3	2	-	1
APH 202	Introduction of Animal Agriculture	3	2	-	1
FWM 204	Principles of Range Ecology and Management	2	2	-	-
ANN 204	Introductory Agricultural Biochemistry	**2**	2	-	-
HSM 200	Introduction to Home Science and Management	2	2	-	-
HRT 202	Introduction Landscaping and Landscape plan	3	2	-	1
PCP 202	Crop Anatomy, Taxonomy and Physiology	3	2	-	1
ETS 206	Entrepreneurship and Change Management	2	2	-	-
GNS 204	Logic and History of Science	2	2	-	-
GNS 203	Use of Library	1	1	-	-
GNS 202	Elements of Politics and Government	1	1	-	-
	TOTAL	**24**	**20**	**-**	**4**

300 Level: First Semester

Course Code	Course Title	U	L	T	P
FWM 301	Principles of Silviculture	2	2	-	-
FWM 303	Natural Ecosystems	3	2	-	1
FWM 305	Introduction to Forestry and Wildlife Resources Management	2	2	-	-
FWM 307	Introduction to Forestry and Wildlife Extension	**2**	2	-	-
FWM 309	Wood Anatomy, Formation and Properties	2	1	-	1
FWM 311	Zoo Planning and Museum Management	2	1	-	1
FWM 313	Forest Resources Inventory and Mensuration	3	2	-	1
EMT 405	Environmental Education and Awareness	3	2	-	1
FWM 315	Remote Sensing and Mapping Techniques	3	2	-	1
FST 201	Introduction to Food Science and Technology	2	2	-	-
	TOTAL	**24**	**18**	**-**	**6**

300 Level: Second Semester

Course Code	Course Title	U	L	T	P
FWM 302	Forest Economics	2	2	-	-
FWM 324	Aerial and Ground Survey	2	1	-	1
FWM 306	Wildlife Ecology and Management	3	2	-	1
FWM 308	Forestry & Wildlife Entrepreneurial Studies	**2**	1	-	1
FWM 310	Forest and Wildlife Biometrics	2	2	-	-
FWM 312	Herpetology	2	1	-	1
FWM 314	Principles of Agroforestry	2	2	-	-
FWM 316	Seed and Forest Nursery Technology	2	1	-	1
FWM 318	Wildlife Population Analysis	2	1	-	1
FWM 320	Forest and Wildlife Pests and Diseases	3	2		1
CPT 312	Principles of Crop Protection	2	1	-	1
	TOTAL	**24**	**16**	**-**	**8**

400 LEVEL: Forestry and Wildlife Practicals (FWP)
Industrial Attachment (Modules)

Course Code	Course Title	Units
FWP 401	Forest Inventory and management Plan	3
FWP 402	Remote Sensing and Mapping	2
FWP 403	Silvicultural Techniques and Nursery Management	2
FWP 404	Taxidermy and Museum Techniques	1
FWP 405	Agroforestry Practicals	1
FWP 406	Aerial and Ground Survey	2
FWP 407	Training in Firearms and Ballistics	2
FWP 408	Wood Seasoning and Preservation	2
FWP 409	Pulp and Paper Technology	2
FWP 410	Wildlife Production Techniques	1
FWP 411	Harvesting, Processing and Wood Utilization	2
FWP 412	Saw Milling and Wood Based Industrial Processes	3
FWP 413	Forest Operations	2
FWP 414	Forest and Wildlife Population Field Survey	1
FWP 415	Zoo Management Techniques	1
FWP 416	Park/Protected Area Management and Conservation	1
FWP 417	Wildlife Ecological Survey	3
FWP 418	Natural and Man-Made Forest Plantation Techniques	2
FWP 419	Forest Ecological Survey and Herbarium Techniques	1
FWP 420	Report Writing	2
TOTAL		**36**

500 LEVEL: FIRST SEMESTER (*WILDLIFE OPTION)*

Course Code	Course Title	U	L	T	P
FRM 501	Multiple Land Use	2	1	-	1
WRM 503	Wildlife Management	2	1	-	1
WRM 505	Wildlife Policy, Law and Administration	2	1	-	1
WRM 507	Game Ranching and Domestication	2	1	-	1
WRM 509	Wildlife Genetics, Breeding and Conservation	2	1	-	1
WRM 511	Wildlife Recreational Planning	2	1	-	1
WRM 513	Wildlife Extension and Education	2	1	-	1
EMT 511	Ecological Disaster and Control	3	2	-	1
WRM 597	Seminar	1	-	2	-
	TOTAL	**18**	**7**	**2**	**7**

500 Level: Second Semester

Course Code	Course Title	U	L	T	P
WRM 502	Management of Game Birds (Ornithology)	2	1	-	1
WRM 504	Wildlife Pests, Diseases and Control	2	1	-	1
WRM 506	Wildlife Nutrition	2	1	-	
WRM 508	Wildlife Harvesting and Utilization	2	1	-	1
WRM 510	Park Interpretation	2	1	-	1
WRM 514	Natural History of African Mammals	3	2	-	1
WRM 598	Seminar I	2	1	-	1
WRM 599	Project	4	-	-	4
	TOTAL	**18**	**8**	**-**	**10**
ELECTIVES					
WRM 514	Natural History of African Mammals	3			
ANP 502	Nigerian Feeds and Feeding Stuffs	3			

500 Level: First Semester (*Forestry Option)*

Course Code	Course Title	U	L	T	P
FRM 501	Multiple Land Use	2	1	-	1
FRM 503	Forestry Management Techniques	2	1	-	1
FRM 505	Forestry Policy, Law and Administration	2	1	-	1
FRM 507	Advanced Silviculture	2	1	-	1
FRM 509	Forest Soils	2	1	-	1`
FRM 511	Forest Genetics, Tree Breeding and conservation	2	1	-	1
FRM 513	Forest Pest, Diseases and Forest Protection	2	1	-	1
FRM 515	Natural Resources Economics and Marketing	2	1	-	1
EMT 511	Ecological Disaster and Control	3	2	-	1
FRM 597	Seminar I	1	-	-	-
	TOTAL	**20**	**10**	**-**	**9**

500 Level: Second Semester

Course Code	Course Title	U	L	T	P
FRM 502	Forest Industrial and Timber Quality Control	2	1	-	1
FRM 504	Wood Processing and Pulping Process	2	1	-	1
FRM 506	Forestry Extension and Education	2	2	-	-
FRM 508	Forestry Resources Utilization	2	2	-	-
FRM 510	Urban Forestry	2	1	-	1
FRM 512	Wood Based Panel Product	2	1	-	1
FRM 598	Seminar II	1	-	-	1
FRM 599	Project	4	-	-	4
	ELECTIVES	3	3	-	-
	TOTAL	**20**	**11**	**-**	**9**
Electives					
FRM 514	Quantitative Ecology	3			
FRM 516	Taxonomic Methods and Herbarium Techniques	3			
FRM 518	Forest Engineering	3			

COURSE SYNOPSES

FWM 201: INTRODUCTION TO FOREST AND WILDLIFE MANAGEMENT (2 Units)
Renewable natural resources, availability, distribution and potential. The important forest trees and wildlife (with emphasis on Nigerian species). Classification, Morphology, distribution and ecology of important forest trees, forest and game reserves in Nigeria. Silviculture; afforestation characteristics of major timber and their uses. Felling and log transportation. Importance of forest in the national economy. Organisation of forest resources, non-timber resources. Forest protection and conservation, regulation of harvest and sustained yield.

FWM 203: PRINCIPLES OF CONSERVATION IN TROPICAL AFRICA (2 Units)
The need for conservation. Aims and objectives of conservation. Target species, courses of migration and emigration in fish and wildlife species. Conservation methods and techniques for critical ecosystems such as watersheds, hilly areas, grazing lands, open pit mining, areas of broken topography and marginal environment preservation of endangered plants and animals.

FWM 204: PRINCIPLES OF RANGE ECOLOGY AND MANAGEMENT (2 Units)
Principal range types in West Africa. Application of ecological principle in the management of grazing lands. Objectives of range management, grazing systems. Manipulation of animal numbers for desired management objective.

FWM 301: PRINCIPLES OF SILVICULTURE (2 Units)
Meaning of Silviculture, Importance of Silviculture in forestry practices. Analysis and study of problems of raising the tree crops. Climatic and Edaphic factors affecting tree growth. Tropical forest regeneration methods – Natural and artificial. Application for establishment and maintenance of forest for various purposes. Taungya and other silvicultural practices.

FWM 303: NATURAL ECOSYSTEMS (3 Units)
Distribution, structure and dynamics of lands and freshwater ecosystems. The flow of energy and materials through natural ecosystems. The importance of conservation, conservation techniques. Tree identification.

FWM 305: INTRODUCTION TO FOREST ANDWILDLIFE RESOURCESMANAGEMENT (2 Units)
Organisation of Forest and Wildlife Resources, morphology, taxonomy and ecology of tropical trees and wildlife. Forest and wildlife Production Activities, Forest and Wildlife Protection and the regulation of harvest for sustained yield. Preparation of management plans. Solving managerial problems. Introduction to operations

research in Forestry and wildlife.

FWM 307: INTRODUCTION TO FOREST AND WILDLIFE EXTENSION (2 Units)
The need for Forest and Wildlife extension. Forest and Wildlife Extension in the world and Nigeria. Basic philosophies behind Forestry and Wildlife Extension. Basic concepts and principles of rural sociology to an understanding of rural institution. Importance of rural communities and institution, social stratification social processes and social changes in rural areas, leadership in rural communities, role and functions of rural leaders. The extension agent and rural community. Communication techniques and strategies of change. Various Forestry and Wildlife extension teaching methods, aids and their uses.

FWM 309: WOOD ANATOMY, FORMATION AND PROPERTIES (2 Units)
Gross and microscopic structure of wood and its chemical composition. Wood formation, structures and properties. Anatomical characteristics of wood for identification. Physical and Chemical Properties of Wood.

FWM 311: ZOO PLANNING AND MUSEUM MANAGEMENT (2 Units)
Basic objectives of Zoo and Park Planning. Design of Zoo and Park facilities, capture and transportation of wild animals. Animal health, handling and care of wild animals in captivity. Amusement infrastructures for zoo and nature simulation, feeding of Zoo animals, Zoo sanitation and visitors control. Collection and preservation of animal specimens for educational and recreational purposes.

FWM 313: FOREST RESOURCES INVENTORY AND MENSURATION (3 Units)
Forest mensuration-meaning and aims, Measurement and instruments for measuring diameter and height, tree taper and form, stand measurement, forest resources inventory measurements, etc.

FWM 302: FOREST ECONOMICS (2 Units)
Definition of Forest goods and services; application of economic principles to forest resources; decision making in single and multiple resource use; cost –benefit analysis,

FWM 306: WILDLIFE ECOLOGY AND MANAGEMENT (3 Units)
Organisation of Wildlife Resources. Wildlife in relation to their environment. Factors affecting distribution and abundance of Wildlife. Wildlife population characteristic of mortality, movement, life cycles, food and food habits. Wildlife capture techniques; objectives, traps and consideration for design; Immobilization by drugs. Handy, care and feeding of captured animals field exercises of different capture methods.

FWM 310: FOREST AND WILDLIFE BIOMETRICS (2 Units)

Practical concept in the design and analysis of experiments on tree crops and wildlife survey techniques as they relate to forestry problems. Processing of resource inventory and mensuration data for management purposed distribution, sampling and tests of hypothesis. Application of multivariate analysis to forestry and wildlife, basic techniques in survey sampling and design.

FWM 312: HERPERTOLOGY (2 Units)

Classification and characteristics of important West African reptiles. Anatomy, physiology and reproduction of African reptiles. Food and feeding habits. Distribution and economic, importance.

FWM 314: PRINCIPLES OF AGROFORESTRY (2 Units)

The concept of agroforestry, genesis, current development, prospects and problems. Interlink between crop, tree and animal husbandry. Biological integration of agro/silvo/pastoral practices. Role of component crops/animals in land utilization and site conservation socio-economic feasibilities and limitations.

FWM 316: SEED AND FOREST NURSERY TECHNOLOGY (2 Units)

Seed and its importance, seed collection and procurement, seed certification, records, seed storage, packaging and transport, seed testing, seed dormancy, pre-germination test. Nursery establishment; types of forest nurseries planning, forest nurseries, nursery site selection preparation, nursery layout; seed sowing; care, protection, conditioning of seedlings, quality control, pricking out and transplanting seedlings, raising non-seedling planting stock.

FWM 318: WILDLIFE POPULATION ANALYSIS (2 Units)

Methods of studying animal numbers and distribution. Ground and aerial censuring methods in wildlife stock assessment. Capture-recapture techniques, tagging marking. Population Structure. Reproduction and survival rate. Age sex determination. Life tables year class determination, length, weight studies and their interrelationships. Practical evaluation of Wildlife resources of selected projects areas.

FWM 401: FORESTRY INVENTORY AND MANAGEMENT (3 Units)

Application of basic biometric techniques to problems in forest resource management. Distributions, sampling and tests of hypotheses; working plans as management tools, Components of working plans. Survey techniques as they relate to forestry problems. Processing or resource inventory and mensuration data for management purposes. Evaluation of the wood resources of selected areas. Preparation of management plans for such areas.

FWM 403: SILVICULTURE TECHNIQUES (3 Units)
Seed tests, Nursery operations. Plantation tending operations beating up pruning, thinning etc.

FWM 405: AGROFORESTRY PRACTICAL (1 Unit)
Design of Agroforestry farms.

FWM 407: TRAINING IN FIREARMS AND BALLISTICS (2 Units)
Study of firearms, types and specification and firearms and ammunition, maintenance of firearms, types of shooting ranges, animal hunting methods, aspect of hunting sociology (hunting/Landowner relationship.

FWM 411: HARVESTING, PROCESSING AND WOOD UTILIZATION (3 Units)
Theory of road construction, drainage and maintenance, bridge and dam construction planning analysis and supervision of operations. Forest roads. Terms used in road construction, forest bridges and culverts – bridge project operations and machines, forest building structures – building and construction; maintenance and protection of these structures.

FWM 413: FOREST OPERATIONS (3 Units)
Field application of felling and logging techniques, planning analysis and supervision of forest operation, logging and transportation. Care and maintenance of forest machines, gantries management and maintenance.

FWM 415: ZOO AND PARKS MANAGEMENT TECHNIQUES (3 Units)
Basic objectives of zoo and park planning. Design of zoo and parks facilities, capture and transportation of wild animals. Animal health, handling and care of wild animals in captivity. Amusement infrastructures for zoo and nature simulation. Feeding of zoo animals. Zoo sanitation and the control of zoo visitors.

FWM 419: ECOLOGICAL SURVEY (3 Units)
Field studies of the vegetation, fauna and soil and water types of selected terrestrial and aquatic Project areas.

FWM 404: PRACTICAL FIELD SURVEY IN THE FOREST AND SAVANNA ZONES (4 Units)
Practical field survey to High Forest Ecological Zones of Nigeria. Biodiversity Inventory, Identification, and Utilization. Study tours of Savanna Ecological zones of Nigeria. Wildlife and range management areas of the country. National Parks, Forest and Game Reserves, Wildlife Protected area, In-situ and Ex-situ conservation areas in Nigeria (e.g. Zoos, Botanical Gardens, Nigeria Conservation Foundation, Savanna Conservation Project Sites.

FWM 406: NATURAL AND MANMADE FOREST PLANTATION TECHNIQUES (3 units)
Natural and Manmade Forest Plantation Techniques. Silvicultural Techniques for some indigenous and exotic tree species, Tree breeding, Arboretum, Nursery techniques, Plantation Establishment, Shelterbelt, Agro forestry practices, lost crops and medicinal plants identification and establishment.

FWM 408: WILDLIFE PRODUCTION TECHNIQUES (2 units)
Wildlife Domestication and Multiplication Projects. Wildlife farming (e.g. Grasscutter farming, snailery, Guinea fowl production and wildlife ranching programmes).Raising of herpetological, avifaunal, insects and other wildlife macro and micro species. Research techniques. Wildlife based eco-tourism. Exploration and utilization of non-timber forest products. Bee-keeping techniques. Moriculture, vermiculture and sericulture techniques.

FWM 410: WOOD BASED INDUSTRIAL PROCESSES (3 units)
Wood technology, logging operations, transportation, gantries, forest road construction, and forest bridge construction. Pulp and paper making. Strength of wood materials. Wood products. Saw mills operations and machineries wood marketing.

FWM 412: FOREST AND WILDLIFE POPULATION FIELD SURVEY (2 units)
Land survey, forest survey, and wildlife population survey. Aerial photogrammetry and photo interpretation. Remote sensing techniques application to forestry and wildlife. Biometrics.

FWM 414: I. T. REPORT AND ASSESSMENT (2 units)

FRM 501: MULTIPLE LAND USE (2 Units)
Nigeria's land resources, attitude and conflicts, strategies for resolution of conflicts, integrated policies for land areas. Decision making in the allocation of land for forestry, Wildlife and agriculture, legislation relating to land and environmental planning.

FRM 503: FOREST MANAGEMENT TECHNIQUES (2 Units)
Principles of sustained yield; yield control and management for optimization of set objectives. Systems approach to forest management, use of analytical processing in forest management and Utilization decisions.

FRM 505: FOREST POLICY, LAW AND ADMINISTRATION (2 Units)
Forest and related natural resource policies, planning effective use of forest resources, structure of forest administration, problems of conserving forest and endangered

species. Nigerian law in natural resources management, inter-relationship of forestry departments.

FRM 507: ADVANCED SILVICULTURE (2 Units)

Major forest types of the tropics and silvicultural systems employed in their management, plantation and nursery practices, procedure for introducing exotic species. Forest Nursery technology. Plantation establishment and maintenance thinning and pruning operations, rotation regeneration and protection.

FRM 509: FOREST SOILS (2 Units)

Understanding of soil dynamics and influence upon forest composition stand regeneration, tree vigour and tree growth rate, forest soil physics, chemistry and microbiology, soil moisture movement, forest nursery soil management, forest soil fertility determination, maintenance and improvement with special reference to tropical conditions.

FRM 511: FOREST GENETIC BREEDING AND CONSERVATION (2 Units)

Inventory, selection and conservation of basic genetic material for mass production of improved strains for silviculture. Theory, practice, methods of consequences of breeding tree crops, principles underlying choice of species, quantitative genetics in forest tree improvement. Economics of tree breeding, tree breeding programmes, principles, establishment and management of seed orchards. In-situ and Ex-situ conservation.

FRM 513: FOREST PESTS, DISEASES AND FOREST PROTECTION (2 Units)

Scope, importance, taxonomy and biology of major pests and diseases of forest trees. Principles underlying disease and pest control, biological, chemical, genetic and enviromental control, forest antomology – leaf eaters, sap feeders. Wood and cambial borers, root feeders, population dynamics and forest insects, forest pathology-nature of diseases organisms, nemtaotdes, viruses, fungi, damping off, leaf sports, rots, malformation, blight, mildews, rusts, smuts, the parasite in relation tot he host, factors influencing infection fungal pathogens of importance in forestry e.g. *Armallaria mellea* (a most destructive plant fungi), *Polyporus hispidus* (heartrot fungus), control measures. Nematology - plant porasitic nematode, symptoms of hematode infection. Virology – symptoms and control, virus diesease indentification. Fire protection and control.

FRM 515: NATURAL RESOURCES ECONOMICS (2 Units)

Renewable and non-renewable resources, introduction to operations research, Demand and supply of natural resources, market trends of demand and supply, application of economic principles to decision making in natural resource, project

evaluation, natural resources and economic development.

EMT 511: ECOLOGICAL DISASTERS AND CONTROL (3 Units)
Nature of Ecological disasters and implication for resources conservation and management. Ecological consequences of mismanagement of natural resources. Definition, types and causes of floods. Effects of floods in cities, agricultural lands, roads, rail lines etc. Flood control measures: Engineering measures – reservoir – detention basis, reservoir design and control, etc. Safety requirement – design of dykes, location and drainage. Flood diversion and channel improvement. Administrative measures – Flood forecasting, flood plain zoning practice of green belt establishments in cities, industrial area and shelter belt establishment in and coastal areas. Origin and causes, types and forms of Erosion. Mechanics of erosion. Erosion forecasting, soil water drainage, leaching and water disposal. Economical and benefits of erosion control.

FRM 597: SEMINARS (2 Units)
Wildlife Option

FRM 501: MULTIPLE LAND USE (2 Units)
Nigeria's land resources, attitude and conflicts, strategies for resolution of conflicts, integrated policies for land areas. Decision making in the allocation of land for forestry, Wildlife and agriculture, legislation relating to land and environmental planning.

WRM 503: WILDLIFE MANAGEMENT TECHNIQUES (2 Units)
Observations and records, capturing and marking wild animals, necropsy in birds and mammals, physiological indices of reproduction, sex and age structure, estimating population, habitat study, improvement and evaluation, elementary wildlife telemetry, human factors in wildlife management.

WRM 505: WILDLIFE POLICY, LAW AND ADMINISTRATION (2 Units)
Wildlife and related natural resources policies; Planning effective use of wildlife resources; structure of wildlife administration; wildlife conservation for economic and recreational uses, problems of wildlife conservation in Nigeria. Nigeria law in natural resources management; interrelationship of Wildlife Departments.

WRM 507: GAME RANCHING AND DOMESTICATION (2 Units)
Need for animal domestication; History of Ranching and domestication; Types of levels of domestication. Basis for selection of species; Experimental approach to ranching and domestication; Planning and design of cages for various game species. Growth behaviour and reproduction of game species' food preference, Health care and game husbandry techniques.

WRM 509: WILDLIFE GENETICS BREEDING AND CONSERVATION (2 Units)
Basic concepts of genetics. Law of inheritance. Natural and induced breeding. Artificial insemination techniques for rodents, game birds, snail, antelope and other animals in captivity. Wildlife improvement through crossbreeding. Practical experiences in artificial insemination and induced breeding.

WRM 511: WILDLIFE RECREATIONAL PLANNING (2 Units)
Master plan, levels of planning, historical origin of park development in Nigeria, types of parks, purpose and criteria for establishment, major steps in planning process, zoning, carrying capacity in recreation, recreational activities and development, safety in recreation.

SECOND SEMESTER
Forestry Option
FRM 502: FOREST INDUSTRIES AND TIMBER QUALITY CONTROL (2 Units)
Forest based industries including furniture, sawmills, ply mill, fibreboard, chipboard and particle board, determination of timber quality and its control, inspection, sampling and grading, wood protection, minor forest based industries e.g. charcoal production, cellulose derivatives industry; marketing of forest resources, sitting of forest industries.

FRM 504: WOOD PROCESSING AND PULPING PROCESS (2 Units)
Evaluation of quality of standing trees, felling and logging techniques, wood conservation and processing, wood seasoning and preservation; machining, gluing, preservation and finishing; charcoal production, chemical processing of pulp and paper.

FRM 506: FORESTRY EXTENSION AND EDUCATION (2 Units)
Management interpretation to include methods and techniques for communicating values of forest, Parks, game reserves and other wildlands. The role of the extension agency in providing organisation and administrative support in forestry. Training programmes for extension workers in forestry and Wildlife.

FRM 508: FOREST RESOURCES UTILIZATION (2 Units)
Taxonomy, nomenclature, identification, geography and ecological characteristics of major Nigerian Fruit Trees. Domestication and multiplication and utilization of fruit trees, woody and non-woody Forest resources.

FRM 510: URBAN FORESTRY (2 Units)
Concepts of Urban Forestry, difference between Urban Forest and Urban Forestry,

Prospect of Urban Forestry, Benefits of Urban Forestry, Sources of Urban NTFP's, the values of Urban NTFP's, uses and Markets for Urban NTFP's, Urban NTFP's collectors, Tree planting guides in Urban Forestry.

FRM 598: SEMINAR (2Units)

FRM 514: QUANTITATIVE ECOLOGY (2 Units)

Description of vegetation, sampling, tests of comparison and application of Quadrat measure. Vegetation changes, plant succession and the climate. Correlation and the causal factors of positive and negative association between species. Plant population dynamics.

FRM 516: HERBARIUM AND TAXONOMIC TECHNIQUES (3 Units)

Definition of plant taxonomy, aims and objectives of Taxonomy. Importance of plant taxonomy. Units of Classification. Plant nomenclature, systems of Classification. Field characters in tree identification: the leaf structure, types of leaf, arrangement of leaves on the stem, the shape or form of the leaf/leaflets, tips and margin of leaves vestiture-the covering (hairy/glabrous), the leaf basis, texture. The flower, flora formula, aestivation, inflorescence, fruits: classification of fruits. Tree identification using key, types of keys. Herbarium: Definition of forest herbarium, functions of forest herbarium. Botanical specimen, collection and preservation.

FRM 518: FOREST ENGINEERING (3 Units)

Introduction to Forest Engineering. Timber Testing. Timber Mechanics. Wood drying and defects. Forest roads, roof and bridges trusses.

FRM 599: SPECIAL PROJECTS (4 Units)

Each student is required to choose and execute a special research project under a supervisor. Duration of project is a minimum of two semesters. Typed and bound project report to be submitted at the end of project.

Wildlife Option

WRM 502: ORNITHOLOGY (2 Units)

Classification structure, ecology and economic of birds and avifauna of Africa, distribution and identification of game birds, management techniques.

WRM 504: WILDLIFE PESTS, DISASES AND CONTROL (2 Units)

Major pests and diseases of wildlife, Taxonomy and biology of major pests and diseases of wildlife. Epidemiology of parasite population. Principles of diseases and pest control. International restrictions binding transportation of wildlife across country boundary.

WRM 506: WILDLIFE NUTRITION (2 Units)

Principles of nutrition of wildlife, nutrient composition of Wildlife food, nutrient requirement of Wildlife for various physiological processes, feed formulation, ration preparation and general methods of feeding wildlife species. The role of nutrition in the survival and population dynamics of wildlife in their natural habitats. Diets and feeding programmes for selected wildlife species (Artiodctyla, Insectivora, Lafamorphis, Elephantidae, Arothropods).

WRM 508: WILDLIFE MANAGEMENT AND UTILIZATION (2 Units)

Wildlife production, harvesting strategies and problems of game cropping, "bush meat" processing methods, traditional uses of wildlife and wildlife products, hunting techniques, game ranching and domestication, growth behaviours and reproduction of animals in captivity, food habit and food preferences, Design of paddoks, animal houses and cages. Husbandry techniques and health care in captivity, Bee keeping.

WRM 510: PARK INTERPRETATION AND WILDLIFE EXTENSION (2 Units)

Principles of interpretation and extension, interpretive media, personal and non-personal services, conducted activities, audio devices, exhibits, photography in interpretation and extension, target audience and publics.

WRM 514: NATURAL HISTORY OF AFRICAN MAMMALS (2 Units)

Characteristics of Vertebrates. Orders of African Mammals. General taxonomy characteristics. Natural History of specific animals in the five major orders that are predominant in Africa's protected ecological ranges: Proboscidaea: African Elephant; Perrisodactyla: Zebra, Rhinoceros, etc. Artiodacty Artiodactla- Antelopes, Bovids, etc. Canivora: Lion, Cheetah, Hyena, Leopards and Carnivores with Omnivorous characteristics. Primata: Primates- Gorilla, Chimpanzee, Monkeys.

DEPARTMENT OF WATER RESOURCES MANAGEMENT AND AGRICULTURAL METEOROLOGY

Preamble

The Benchmark Minimum Academic Standards are for degree programmes in Water Resources Management and Agricultural Meteorology with the following options:

- Water Resources Management and Hydrology option
- Agricultural Meteorology option.

Currently courses are mounted in Climatology, theoretical and applied meteorology, hydrology and water resources management as well as aspects of Water Resources Engineering. In addition courses in other relevant applied areas have been mounted.

Philosophy

The primary philosophy that guides the training of students under this program is the production of skilled manpower that is furnished with the comprehensive information required to:

- Handle the problems of water resources in the area of distribution and availability, management and mode of extraction for domestic agricultural and industrial uses. It will also provide basic training required in the sustainable development of drainage basins. Thus introductory and core courses including practical are mounted in hydrological processes and analysis as well as in Water Resources Development and Management.

- Handle the problems of climate as it affects Agricultural practices including specific effects on animal production, Food Crop Production, Forestry and Aquaculture Production. Furthermore it will provide the basic training needed for understanding current environmental problems on land, ocean and atmosphere. Therefore introductory and core courses including practical are mounted in climatological processes and analyses, basic Meteorology/Climatology and applied aspects as related to Water Resources, Agriculture and Environment in General.

  The training program is mounted through classroom instruction, Laboratory practical, field demonstration and workshop practice.

Objectives

From the Philosophy stated above, the major objectives of the program are:

- To develop an effective and operational method of water resources exploration and exploitation for improving the quantity and quality of potable water and pedal out water related diseases.
- To produce competent manpower with adequate practical background in the development and management of water resources schemes in the area of

exploration, exploitation, quality monitoring as well as distribution for municipal, Industrial and agricultural uses.

- To contribute to the achievement of the national goal on food security and poverty alleviation through objective assessment of impact of climate change, climate variability and extremes on agriculture and the livelihoods of peasant farmers.
- To evolve effective ways of preventing and reducing climate related agricultural losses (Crop and Animals) and protecting agricultural land resources from ecological degradation arising from meteorological hazards.
- To enhance the development of suitable techniques for accurate prediction of weather elements which affect farm planning and operation as well as post-harvest storage.
- To produce competent manpower with adequate practical background and basic knowledge of the climatic environment and its effects on terrestrial ecosystem and man's agricultural endeavor, including marine and aeronautical enterprises. General expectations include ability to make reliable seasonal weather forecasts for the schedule of farm operations and agricultural practices in general.

Admission and Graduation Requirements

UME Entry Mode: Credit Passes in 5 WASCE/GCE/NECO subjects including English, Mathematics, Chemistry and Geography with at least a pass in Physics; Biology &Agric. Science.

Direct Entry: "A" Level passes in Mathematics, Chemistry, Physics or Geography. Also Holders of HND or its equivalent in Agric. or Civil Engineering or other related courses (provided the "O" Level requirements have been met), can be admitted into 200 Level.

Requirements for Graduation

Apart from prescribed courses that should be passed, students are also expected to spend a period of six (6) months in relevant private and/or government agencies in order to expose them to the professional environment.

At the end of the program, the products are expected to:

- He/she must have passed all the University COMPULSORY courses.
- He/she must have passed all Departmental/College CORE courses and required electives.
- He/she must not have spent more than two additional years above prescribed minimum duration specified.
- He/she must not have less than a CGPA of 1.0 at the end of the program.

The distribution of the units is as shown below:

		4 Years Program	5 Years Program
a.	**University Compulsory Courses**		
i.	General Studies	5	10
Ii	Other Compulsory Courses:	Agro. Met 50	30
		Water 48	28
	100 Level Courses		30
b.	**Departmental Core Courses**		
i.	200 Level	8	8
Ii	300 Level	24	24
Iii	400 Level	Agro. Met 16	Agro. Met 3
		Water 16	Water 2
Iv	500 Level	Agro. Met 23	Agro. Met 10
		Water 21	Water 9
V	Industrial training	16	16
	Electives	15	15
	Minimum	**Agro. Met 157**	**Agro. Met 174**
		Water 153	**Water 172**

Learning Outcomes

Cognitive Abilities and Skills

At the end of the programme, graduates should be able to:

- handle problems of water resources management with respect to extraction and distribution for domestic, agriculture, industrial etc., uses.
- deal with the sustainable development of drainage basins
- deal with problems arising from climate as they affect agricultural practices like livestock, enable agriculture, aquaculture and forestry.
- understand environmental problems and proffer solutions to them etc.

Practical Skills

The graduate of the programme should possess practical skills in the handling and usage of hydrological equipment and be able to carry out analysis of data generated from them.

- Hydrological equipment and be able to carry out analyses of data generated from them.
- Use the data so generated and analysed for Water resources development and Management
- Generate meteorological and climatological data with the appropriate equipment and tools.
- Process and analyse the data for use in agricultural planning and development; and other applications related to water resources and environmental management e.g. floods, droughts etc.

Behavioural Attributes

The graduate of the programme should appreciate that there is dignity in labour through competence in conception, planning, execution, monitoring and evaluation of various agricultural production enterprises, and the graduate should be able to adapt to the socio economic and cultural situations of rural setting and integrate with rural community dwellers.

Attainment Levels

Graduates should be able to function effectively as farmers. Moreover, they should be able to address familiar as well as unfamiliar problems efficiently and accurately such as to benefit the community who will learn from them.

Regime of subject knowledge

From the regime of their knowledge acquired Graduates should be able to function effectively in advisory capacity to farmers in the areas of Water Resources utilization and Agro-meteorological information moreover they should be able to address familiar as well as unfamiliar problems efficiently and accurately such as to benefit the community who will learn from them.

In addition, students should be taken on excursion to relevant agricultural enterprises.

Competencies and Skills

- Graduates will have competence in conceptual, management and entrepreneurial skills;
- Graduates will acquire practical and analytical competence to enable them manage sustainable agricultural production schemes;
- Graduates will be equipped with data processing skills in all agricultural disciplines and have ability to interpret data to provide solutions to agricultural problems;
- Graduates will have competences in communication skills and be able to present research/field reports with convincing arguments clearly either in writing or orally;
- Graduates will be equipped with information technology skills required for global communication; and
- Graduates will have skills in participatory approach to conservation and utilization of renewable natural resource with a view to enhancing rural development. Learning methods will include lectures, practicals, tutorials, seminars, field trips, industrial attachments, internet browsing, assignments/continuous assessment, test/term papers.

Resource Requirements for Teaching and Learning

a) **Academic Staff and Non-Academic Staff**

As shown in 1.6.1

- **Academic and Non-Academic Space**

b) **Academic Physical Spaces**

The NUC approved guidelines are as follows:

i.	Professors	18.5 m2
ii.	Other Academic Staff	13.5 m2
iii.	Faculty Officer	13.5 m2
iv.	Other Senior Staff	13.5 m2
v.	Research space allowance	16.5 m2/member of staff
vi	Classroom space	0.7 m2/student
vii.	Other department, office and storage space	0.7 m2/ student
viii.	Seminar room	0.2m2/student
ix.	Laboratories	7.5 m2/student
x.	Drawing room	5.0 m2/student
xi.	Farm	½ hectare/student

c) **Administrative Facilities**

d) **Library and Information Resources**

There should be fully computerized library stocked with current books, Journals and periodicals and audiovisuals, photocopiers, microfilms CD - ROMS etc.

- Computers for teaching purposes
- Audio visual aids

Academic Staff

Name	Qualifications	Specialization	Designation
Grace O. Oluwasanya	B.Agric. (Abeokuta). M.Sc. (Wageningen) Ph.D. (Cranfield)	Water Resources Management – Water Safety	Senior Lecturer & Ag. Head of Department
O. Martins	B.Sc, M.Sc., Ph.D (Bochum, Hamburg).	Water Resources Management	Professor
N. J. Bello	B.Sc.(Ibadan), M.Sc. Ph.D (Ilorin) Cert. in Agroclimatology, (Reading); Crop Weather Modelling, Israel).	Climatology and Agro-meteorology	Professor
O. A. Idowu	B.Sc.(Ibadan), M.Sc. (Ife), Ph.D (Kwazulu-Natal).	Hydrology, Hydrogeology and Water Resources Management	Professor
G. C. Ufoegbune	B.Sc. Geography (Nsukka) M. Tech (Minna) Ph.D. (Abeokuta)	Remote Sensing & Agro-meteorology	Professor
J. A. Awomeso	B.Sc. (Ife), M.Sc. Ph.D. (Besancon, France)	Hydrogeology and Hydrology	Reader
J. O. Adejuwon	B.Sc., (Ado-Ekiti), M.Sc.(Port Harcourt) Ph. D. (Ife), PGD; ANIM, ADM, AMNIN,	Climatology and Agro-meteorology	Reader
A. O. Eruola	B.Sc., M.Sc., Ph. D. (Abeokuta))	Hydrology and Agro-meteorology	Senior Lecturer
A. A. Makinde	B.Sc., M.Sc., Ph. D. (Abeokuta)	Hydrology and Agro-meteorology	Lecturer I
O. O. Ayantobo	B.Sc., M.Sc. (Abeokuta), Ph.D. (Northwest A&F, China)	Hydrology and Water Resources Management	Lecturer II
Adetoun A. Adekitan	B.Sc., M.Sc. Ph.D. (Abeokuta)	Water Resources Management and Hydrology	Lecturer II
Erere E. Odjegba	B.Sc., M.Sc., (Abeokuta)	Water Resources Management	Lecturer II

100 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 101	General Biology I	2	2	-	-
BIO 191	Practical Biology 1	1	-	-	1
CHM 101	Introductory physical Chemistry	3	3	-	-
CHM 191	Practical Chemistry 1	1	-	-	1
MTS 101	Algebra	3	2	1	-
PHS 101	General Physics 1	3	2	1	-
PHS 191	Physics Laboratory 1	1	-	-	1
GNS 101	Use of English	2	2	-	-
GNS 111	Introduction to Social Problems	2	2	-	-
GNS 102	Introduction to Nigerian History	1	1	-	-
	Total	19	14	2	3

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
BIO 102	General Biology II	2	2	-	-
BIO 192	Practical Biology II	1	-	-	1
CHM 102	Intro. Organic Chemistry I	2	2	-	-
CHM 104	Intro. Inorganic Chemistry I	2	2	-	-
CHM 192	Practical Chemistry II	1	-	-	1
MTS 102	Calculus and Trigonometry	3	2	1	-
AEM 102	Principles of Economics	2	2	-	-
PHS 102	General Physics II	2	1	-	1
PHS 192	Physics Laboratory II	1	-	-	1
	Total	**16**	**11**	**1**	**4**

200 Level: First Semester

Course Code	Course Title	U	L	T	P
WMA 201	Introductory Meteorology	3	2	1	-
MCE 205	Fluid Mechanics	2	2	-	-
STS 203	Statistics for Physical Science & Engineering	3	2	1	-
PCP 201	Principles of Crop Production	3	2	-	1
CSC 203	Computer Programming I	3	2	-	1
SOS 211	Principles of Soil Science	2	1	-	1
MTS 201	Mathematical Foundations	3	2	1	-
ABE 223	Technical Drawing	2	-	-	2
	Total	**21**	**13**	**3**	**5**

Second Semester

Course Code	Course Title	U	L	T	P
WMA 204	Elements of Hydrology	2	2	-	-
WMA 202	Intro. Climatology & Biogeography	3	3	-	-
CSC 204	Computer Programming II	3	2	-	1
CHM 202	Introductory Chemistry I	3	2	-	1
APH 202	Introduction to Animal Production	2	1	-	1
MTS 232	Ordinary Differential Equation	2	2	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 202	Elements of Politics & Government	1	1	-	-
GNS 203	Use of Library	1	1	-	-
GNS 204	Logic and History of Science	2	2	-	-
ETS 206	Entrepreneurship Studies	2	2	-	-
	Electives (Minimum)	2	2	-	-
	Total	**24**	**21**	**-**	3
Electives					
CVE 309	Strength of Materials	2	2	-	-
WMA 210	Elements of Geo-Science	3	2	-	1
AEM 212	Principles of Agric. Economics	2	2	-	-
MTS 242	Mathematical Methods	2	1	1	-

300 Level: First Semester

Course Code	Course Title	U	L	T	P
WMA 301	Surface Hydrology I	2	2	-	-
WMA 303	Groundwater Hydrology I	2	2	-	-
MCE 305	Fluid Mechanics II	2	1	-	1

WMA 307	Water Resources of Nigeria	2	2	-	-
WMA 309	Agro-meteorology I	3	2	-	1
WMA 313	Hydro-met Instrumentation and Network Design	2	2	-	-
FMW 315	Remote Sensing & Mapping Techniques	3	2	-	1
	Electives (Minimum)	3	2	-	1
	Total	**19**	**15**	**-**	**4**
Electives					
STS 203	General Statistics	2	2	-	-
FWM 210	Intro.to Forest Res. Management	2	2	-	-
MTS 233	Real Analysis I	3	2	1	-
CHM 305	Environmental Chemistry	2	2	-	-
STS 343	Sampling Techniques	2	2	-	-

Second Semester

Course Code	Course Title	U	L	T	P
WMA 302	Groundwater Hydrology II	2	2	-	-
CVE 304	Hydraulics	3	2	-	1
WMA 308	Synoptic Meteorology	2	2	-	-
WMA 314	Surveying & Photogrammetry	3	2	-	1
WMA 316	Agro-meteorology II	3	2	-	1
WMA 318	Water Quality Assessments And Pollution Control	2	2	-	-
WMA 322	Surface Hydrology II	3	2	1	-
WMA 320	Field Work	1	-	-	-
PHS 364	Energy and Environment	1	2	-	
	Electives (Minimum)	3	2	-	1
	Total	**23**	**18**	**1**	**4**
Electives					
FMW 304	Aerial and Ground Survey	3	2	-	1
CVE 308	Soil Mechanics	3	2	-	1
STS 352	Experimental Design 1	3	2	-	1
STS 394	Experimental Design I (Practical)	1	-	-	1

400 Level: First Semester, Water Res. Management and Hydrology Option

Course Code	Course Title	U	L	T	P
WMA 401	Prin. of Soil & Water Conservation	2	2	-	-
WMA 403	Principle of Irrigation	3	2	-	1
WMA 407	Tropical Water System I	3	2	1	-
WMA 409	Hydrological Modeling & Application	3	2	1	
WMA 411	Agro-meteorology III	3	2	-	1
WMA 413	Agro-met. Instrumentation & Network Design II	2	1	-	1
WMA 421	Research Methods & Scientific Writing	1	1	-	-
WMA 423	Hydraulic Structure I	2	1	1	-
CVE 415	Water Supply Engineering	2	2	-	-
	Electives (Minimum)	3	2		1
	Total No. of Units	**24**	**17**	**3**	**4**
Electives					
ARD 201	Intro. to Agricultural Extension and Rural Sociology	2	2	1	-
EMT 401	Environmental Monitoring System & Techniques	3	2	1	-
WMA 425	Data Analysis & Presentation	**1**	**1**	**-**	**-**

400 Level: Second Semester: Industrial Training

Course Code	Course Title	U	L	T	P
WMA 402	Industrial Training Practical	**6**	**-**	**-**	**6**
WMA 404	Industrial Training Field Assessment	**4**	**-**	**-**	**4**
WMA 406	Industrial Training Report	**4**	**-**	**-**	**4**
WMA408	Industrial Training Seminar	**2**	**-**	**-**	**2**
	Total	**16**	**-**	**-**	**16**

400 Level: First Semester Agricultural Meteorology Option

Course Code	Course Title	U	L	T	P
WMA 401	Prin. Of Soil & Water Conservation	2	2	-	-
WMA 403	Principle of Irrigation	3	2	-	1
WMA 407	Tropical Water System I	3	2	1	-
WMA 411	Agro-meteorology III	3	2	1	-
WMA 413	Agro-meteorological Instrumentation & Network Design II	2	1	-	1
WMA 415	Weather Analysis and Prediction	3	1	-	2
WMA 421	Research Methods & Scientific Writing	1	1	-	-
PCP 301	Crop Production I	3	2	-	1
	Electives (Minimum)	3	2	-	1
	Total	**23**	**15**	**2**	**6**
Electives					
ARD 201	Intro. to Agricultural Extension and Rural Sociology	2	2	1	-
ARD 304	Agricultural Communication	2	2	-	-
EMT 401	Environmental Monitoring System & Techniques	3	2	1	-
WMA 417	Principles of Aeronautical & Marine Meteorology	2	2	-	-
WMA 425	Data Analysis & Presentation	1	1	-	-

400 Level: Second Semester: Industrial Training

Course Code	Course Title	U	L	T	P
WMA 402	Industrial Training Practical	**6**	**-**	**-**	**6**
WMA 404	Industrial Training Field Assessment	**4**	**-**	**-**	**4**
WMA 406	Industrial Training Report	**4**	**-**	**-**	**4**
WMA 408	Industrial Training Seminar	**2**	**-**	**-**	**2**
	Total	**16**	**-**	**-**	**16**

500 Level: First Semester: Water Res. Management & Hydrology Option

Course Code	Course Title	U	L	T	P
WMA 501	Hydro-Meteorological Forecasting I	2	1	-	1
WMA 503	Water Res. Planning & Management	3	3	-	-
WMA 509	Water Quality Assessment	3	2	-	1
WMA 511	Agro-met. Instrumentation & Observation and Network Design	3	2	-	1
CVE 521	Hydraulic Structures I	2	1	-	1
EMT 501	Environmental Law	2	2	-	-
EMT 511	Ecological Disasters and Control	2	2	-	-
WMA 515	Seminar I	2	-	2	-
	Elective	3	2	-	1
	Total	**21**	**15**	**1**	**5**
Electives					

EMT 501	Environmental Law	2	1	-	1
AEM 505	Research Methods	3	2	-	1
EMT 517	Environmental Health and Safety Management	3	2	-	1

500 Level: Second Semester

Course Code	Course Title	U	L	T	P
WMA 502	Hydro-Meteorological Forecasting II	2	2	-	-
CVE 502	Irrigation & Drainage Engineering	3	2	-	1
WMA 510	Watershed Management	3	2	-	1
WMA 516	Water Res. And Public Health	3	2	-	1
CVE 522	Hydranlic structures II	2	2	-	-
WMA 598	Seminar II	1	-	1	-
WMA 599	Project	6	-	-	6
	Electives	3	2	-	1
	Total	**23**	**12**	**1**	**10**
Electives					
EMT 306	Environmental Impact Assessment (Compulsory)	3	2	1	-
EMT 504	Waste Management	3	2	-	1

500 Level : First Semester: Agricultural Meteorology Option

Course Code	Course Title	U	L	T	P
WMA 501	Hydro-Meteorological Forecasting I	2	1	-	1
PCP 501	Methods of Field Experimentation	2	1	-	1
PCP 505	Crop Production II	3	2	-	1
WMA 507	Agro-meteorology IV	2	2	-	-
WMA 511	Agro-meteorological Instrumentation Observation	3	2	-	1
WMA 597	Seminar I	1	-	1	-
EMT 501	Environmental Law	2	2	-	-
	Electives	3	2	-	1
	Total	**18**	**12**	**1**	**5**
Electives					
AEM 503	Statistics &Research Methods	3	2	-	1
EMT 505	Ecological Disaster and Control	2	2	-	-
SOS 511	Soil Fertility and Plan Nutrition II	2	2	-	-
PCP 503	Crop Production Systems	3	2	-	1

Second Semester

Course Code	Course Title	U	L	T	P
WMA 502	Hydro-Meteorological Forecasting II	2	2	-	-
WMA 508	Agro-met Methods & Applications	3	2	1	-
HRT 508	Organic and Urban Farming	3	2	-	1
WMA 512	Tropical Weather System II	3	2	1	-
WMA 515	Seminar II	1	-	1	-
WMA 599	Project	6	-	-	6
	Electives (Minimum)	3	2	-	1
	Total	**21**	**10**	**3**	**8**
Electives					
EMT 306	Environmental Impact Assessment (Compulsory)	3	2	1	-
CVE 502	Irrigation & Drainage Engineering	3	2	-	1
FIS 310	Oceanography	2	2	-	-

COURSE SYNOPSES

WMA 201: INTRODUCTORY METEOROLOGY (3 Units)

General properties of the atmosphere; composition and structure of the atmosphere. Basic gas laws applicable to the atmosphere. Principles of atmospheric statistics. Radial energy in the atmosphere, solar radiation; Effective radiation and radiation balance. Heat-exchange in the soil, water and atmosphere. Heat regime of the soil and bodies of water principle of atmosphere thermo-dynamics. Heat transfer in the atmosphere-air temperature, vertical distribution of air temperature; water cycles in the atmosphere. Evaporation and methods of measurement. Condensation of water vapor, cloud types and cloud classification. Network of meteorological stations-observation times and the transmission of information.

WMA 202: INTRODUCTORY CLIMATOLOGY AND BIOGEOGRAPHY (3 Units)

Basic definitions and explanations in Climatology and Biogeography. Climatological problems and investigation methods. Relationships with Meteorology, Biogeography and Hydrology. Climatological data processing methods; basic factors of climate formation, influence of relief on climate and plants. Geographical distribution of climatic elements, plants and animals .Climate and soil. The concept of adaptation in plants and animals. Classification of climates and biogeography of the earth.

WMA 204: ELEMENTS OF HYDROLOGY (2 Units)

Definition, scope and application of hydrology. The concept of hydrological cycle and drainage basin characteristics; Precipitation: Forms, types etc. and measurements. Factors affecting interception, evaporation, evapo-transpiration, surface run-off and subsurface flow. Determination and analysis of infiltration, percolation and permeability. Aquifers and Groundwater movement.

WMA210: ELEMENTS OF GEO-SCIENCE (3 Units)

Definition, Scope and approaches to Geo-science. The nature, composition and classification of the earth's system (open systems, closed systems, matter and energy classification of rocks).

Environmental processes; the atmosphere, earth's-atmosphere and energy system. The inter-relationship between the atmosphere, hydrosphere, lithosphere, biosphere and man. Lithologic and hydrologic cycle, denudation processes, action of flowing water and erosion, flood plan features and characteristics of wetlands; deltas, classification of types of relief, biogeochemical cycle; man's interaction with natural environment and energy system. Composition of the Earth's crust; minerals and rocks (classifications of rocks); Lithologic cycle; classification of types of relief; denudation processes; action of flowing water and erosion; flood-plain features, deltas; biogeochemical cycle.

WMA301:SURFACE HYDROLOGY 1 (2 Units)

Pre-requisite: WMA 204

Precipitation, Analysis of data: Thiessen, Isohyetal and Arithmetical method of computations. Detection of missing data, Double mass curve, Intensity-Depth-Duration-frequency analysis. Evapo-transpiration, Water budget and energy budget methods of determination of reservoir evaporation – Evapo-transpiration from climatological data –Penman method.

Stream-flow: Discharge volume and depth of runoff. Average annual runoff, seasonal runoff. Relation between water levels and discharges – rating curves. Stream-flow hydrograph. Overland flow.

Unit hydrograph: derivation of unit hydrograph, synthetic unit hydrographs. Application of unit hydrographs.

Sediment Transport: Erosive action of rivers, suspended load and bed load. Lake and Reservoirs: hydrology of lakes and reservoirs. Inflow-outflow balance of lakes. Heat and temperature balance in lakes. Rivers, estuaries, Salinity, waves and current. Swamps and mashes. Principles of Oceanography.

WMA 302: GROUND WATER HYDROLOGY II (2 Units)

Pre-requisite: WMA 303

Non-steady radial and rectilinear flows in aquifers. Well pumping tests. Theis and Jacob methods, multiple well systems. Types of wells, Methods for well construction. Well drilling methods: Cable tool, rotary and reserve rotary; well design, development and maintenance. Evaluation of aquifer behavior and water quality. Analysis and interpretation of water level maps, laboratory determination of permeability, porosity, compressibility and velocity of flow. Ground water in Nigeria, groundwater data analyses.

WMA 303: GROUNDWATER HYDROLOGY I (2 Units)

Pre-requisite: WMA 204

Origin, occurrence and role of groundwater. Basic definitions of terms in groundwater studies, classification of aquifers; aquifer parameters, porosity, specific yield, permeability, transmissivity, storativity, anisotropy and heterogeneity. Groundwater geology; rock types and aquifers, geologic processes and aquifers; typical sedimentary rock aquifers. Exploration of groundwater, geological and geophysical methods (Surface and sub-surface).Equation of groundwater flow; Darcy's law and simple applications. Steady radial and rectilinear flows in aquifers.

WMA 307: WATER RESOURCES OF NIGERIA (2Units)

Rainfall; Pattern, spread and quantity. Daily, monthly and yearly rainfall in different regions of the country. Rivers in Nigeria; Main rivers and their flows, average flow, maximum and minimum flow, annual yields. Rivers Niger, Benue, Ogun, Kaduna, Sokoto, Rima, Hadejia, Jamaire, Gurara, etc. Lakes and reservoirs: Natural and artificial

lakes. Reservoirs above dam – Kainji, Jebba, Tiga Dams and Reservoirs etc. Reservoirs behind small and medium earth dams in different States in Nigeria. Tidal and Saline water in the coastal areas. Groundwater: exploitation through Boreholes and Tube wells.

Use of Water: irrigation for agriculture, water supply and wastewater engineering, navigation, hydropower generation, environmental sanitation, industrial use, etc. Agencies: Federal Ministries of Agriculture and Water Resources. Water Corporations, Department of Waterway and Navigation, River Basin Development Authorities, Research Institutes, Universities.

WMA 308: SYNOPTIC METEOROLOGY (2Units)

Pre-requisite: WMA 201

General information on synoptic Meteorology. Methods of Long and Short range weather forecasts. Basic synoptic codes-prospects of using meteorological satellite data-elements of world weather watch; compilation and analysis of weather charts. Analysis of the fields of meteorological elements. Air masses – their classification and properties; Atmospheric forms. Cyclone activity, Macro-synoptic processes and Long-range weather forecast; Laws of general atmospheric circulation; peculiarities of circulation in various areas of the globe.

WMA 309: AGROMETEOROLOGY I (3 Units)

Pre-requisite: WMA 201, 202, PCP 201

Focus of Agrometeorology, Classification of Agro-meteorological indices. Instrumentation and method of observation of Agro-meteorological indices. The thermal based Agro-meteorological indices; Temperature (Soil and air), radiation and photoperiods. The moisture-based indices; precipitation (rainfall, dew, fog), humidity evaporation and evapotranspiration. Evaluation of crop evaporation by lysimeters. Indirect estimation of evaporation, Penman, Thornthwaite, Blarnye-Criddle and Oliver's method. Installation of Agro-meteorological stations.

WMA 318: WATER QUALITY ASSESSMENT AND POLLUTION CONTROL (2 Units)

Pre-requisite: CHM 202

Solvent properties of water, principles of physico-chemical analysis, major ionic components of natural water. Chemistry of natural waters, water quality requirements standards for potable water, irrigation and livestock. Types of water, litholical control of surface and ground water. Water Pollution Studies: Sources, fate, pathways and effects of water pollution, Chemical, Mechanical and Biological methods of maintaining and improving water quality.

WMA 313: HYDRO-METEOROLOGICAL INSTRUMENTATION AND NETWORK DESIGN I (3 Units)

Pre-requisite: WMA 202, 204

Meteorological data: sunshine hours, radiation, relative humidity and wind speed.

Precipitation: Location, Recording and non-recording gauges. Evaporation and evapotranspiration. Pan evaporation, soil evaporimeters and lysimeters, short and long wave radiation, indirect methods.
Network design: General principles for design of networks, general requirements, optimum network, minimum network, optimum use of existing stations in organizing a minimum network. Data to be considered in determining network density. Quality of data to be collected, Density of observation, stations for a minimum network, Factors affecting the density, Minimum density limit of climatological networks.

WMA 314: SURVEYING AND PHOTOGRAMMETRY (3 Units)
Pre-requisite: FWM 315
Contouring: Characteristics of contours; methods of locating contours and plotting, area and volume. Construction survey general principles, setting and laying out Engineering structures, pipes and drains. Production, reading and interpretation of maps. Basic Photogrammetry and practical uses of aerial photographs.

WMA 316: AGRO-METEOROLOGY II (2 Units)
Pre-requisite: WMA 301
A general survey of climate-agriculture relationships: classification of Agro-meteorological indices. The concept of plant environment. The relationship between climate and plant's biophysical environment. Geomorphic, Edaphic and Biotic factors. Major climatic attributes in plant and animal distribution. General climatic aspects of pests and diseases of plants and animals, forestry, fisheries, water resources, livestock production, crop storage and insect control. Water and energy budget of the plant environment. Modification microclimate environment modification of soil temperature regime rainmaking, evaporation suppression and wind speed checks.

WMA 322: SURFACE HYDROLOGY II (3 Units)
Stream flow routing: the storage equation, determination of storage, Reservoir routing, routing in river channels. Analytical and graphical methods of routing, drainage basin outflow by routing. Applications of statistical methods of hydrology – hydrologic variable's probability distribution functions used in hydrology, Gumbel, Gaussian, Lognormal etc. Analytical and graphical solution of extreme value distribution. Design frequency, Frequency analysis from synthetic data, Data generation methods, probable maximum flood, Precipitation probability, Rainfall frequency data and analysis, Regression and correlation analysis, Curve fittings. Flood Frequency Analysis: flood series (partial, annual). Computation, procedures, plotting formulae. Flood peak frequency analysis –graphical and analytical fitting distribution to flood events. Flow duration curves.

WMA 401: PRINCIPLES OF SOIL AND WATER CONSERVATION (2 Units)
Definitions, Ethics and Scope of soil and Water conservation principles.

Geomorphological factors in soil water consideration. Types, forms and significance of soil erosion. Spatial and temporal measurement of erosion processes. Erosivity of rainfall, preparation of erosivity indexes, drainage basin studies. Grazing animal as erosion hazard. Effect of cultivation methods and cropping systems on erosions, slope profiles and soil development. Soil particles, pore water pressure, geomorphology and weathering processes. Soil deterioration by agriculture and other malpractices. Soil conservation methods mechanical and cultural methods. Universal Soil Loss Equation (USLE) and adaptation for Nigeria. Wind erosion, Mechanical methods, terracing types, design and spacing of terrace. Terraces and diversion ditches. Construction and maintenance. Design and construction of grassed waterways, drop structures, gully controls.

WMA 403: PRINCIPLES OF IRRIGATION (3Units)

Pre-requisite: CVE 304

Types of soil. Soil moisture, Field capacity, Wilting coefficient, Available Water.

Water requirements of crops, consumptive use of water. Estimating evapotranspiration by Blarney-Criddle and Penman methods. Irrigation efficiencies. Effective rainfall.Net irrigation requirements, Gross irrigation requirements, Water requirements of major crops. Quality and classification of irrigation water. Soil management, cultivation and maintenance of fertility of irrigated land, Reclamation of swampland, re-use of irrigation water. Problems of drainage, organic soils, special irrigation problems. Use of saline water and urban or industrial effluent.

WMA 407: TROPICAL WEATHER SYSTEMS I (3 Units)

Definition of the meteorological tropics: General characteristics of the tropical atmosphere, spatial and seasonal distribution of weather elements in the tropics. Isolation and temperature air masses, sub-tropical anticyclones, cloudiness, rainfall and evapotranspiration, radiation and water balance in the low attitudes. Implications for agriculture and water resources management of the tropics. Basic features of planetary scale motion in the tropic aspects for tropical circulation. The sub-tropical high-pressure cell (STHs) the trade winds, the equatorial though, the Southeast Asian monsoons, the Westerlies. Effects on tropical climate and agriculture.

WMA 409: WATER QUALITY ASSESSMENT (3 Units)

Comparative studies of natural water: River, Lakes, Sea, Ground and Rainwater. Oxygen demand in aerobic and anaerobic oxidation. Demineralization and Desalting. Hydro-chemical data analysis. History of water quality management: the problem and its science. Developing standards from the traditions of toxicology, classification and environmental quality assessment; the search for ecologically accurate aquatic metrics. The role of scale issues in water quality management. Coastal zone water quality management structuring water management goals by ecological level, effects

of land use on water quality.
Management of water quality in:
i A forested landscape
ii. An agricultural landscape
iii An urban landscape.

WMA 411: AGRO-METEOROLOGY III (3 Units)
Pre-requisite: WMA 316
The nature of climate-agriculture relationships and the methods of their investigation. Specific effects of moisture and thermal Agro-meteorological indices on agricultural production. Effects of amount of spatial and temporal variation of precipitation (rainfall, dew, and fog).Insolation and photo-periodism, soil and air temperature, evapotranspiration, cloud, wind and atmospheric humidity .Micro meteorological research in the boundary layer below plant canopies, crop phenology and microclimate. Quantitative and qualitative effects of solar energy received at the earth's surface, soil heat flux and soil temperature, carbon dioxide balance of the plants environment, wind towers and estimation of boundary layer characteristics. Inter-relationships of wind shelter, moisture conservation and plant growth.

WMA 413: HYDRO-METEOROLOGICAL INSTRUMENTATION AND NETWORK DESIGN II (2 Units)
Pre-requisite: WMA 313
Water levels of rivers, lakes and reservoirs, Gauges and procedures for measurement of state. Frequency of gauge measurements. Discharge measurements: by current meter, float method, dilution method. Measurement of correspondence stage by moving boat method, Ultrasonic methods, Electromagnetic methods, Stream gauging stations. Purpose: selection of sites, control sections, Artificial controls, stage discharge relationships. Stream flow computation, computation of average gauges height, computation of average discharge, Quality control of stream flow data.
Sediment discharge: Measurement of suspended sediment discharge, Measurement of bed-sediment discharge.
Collection, processing and publication of data. Collection and observation procedures. Transmission of hydrological and meteorological observations. Quality control, storage and cataloging. Special data collection requirement: 'bucket surveys' of storm rainfall, weather radar data. Extreme stages and discharges.

WMA 415:WEATHER ANALYSIS AND PREDICTION (3 Units)
Principles of objective analysis and numerical weather prediction; observational statistic, prediction of individual weather elements. Short range forecasting by various methods. Meso-scale analysis, convection systems, local winds and other weather phenomena. Barotropic and baroclinic forecast; surface analysis, analysis of constant

pressure surfaces and other surfaces; cross-section analysis, numerical computation of map factors and of geostropic winds; static stability computation, satellite data and other modern techniques.

Formulation of basic equations of motion: vector from Cartesian coordinate, continuity equation hydrodynamic equation, equation of state. General circulation of the atmosphere: vorticity, divergence and deformation, static stability, circular vortex, and dynamics of meso-scale phenomena, atmospheric turbulence, and waves small-scale turbulence convection treatment of Barotropic and baroclinic waves.

WMA 417: PRINCIPLES OF AERONAUTICAL AND MARINE METEOROLOGY (2 Units)

Meteorological aspects of flight planning.(Pressure pattern flying, definitions of rub line, great circle, metrological requirement for en-route winds and temperatures etc.). Operational knowledge and meteorological services for international air navigation; operation of aircraft: effects of air density, humidity, king, turbulence and wind and meteorological hazards to aviation. Climatological aspects of the organization of observations on ships (ocean weather ships, commercial vessels, etc.).Preparation of climatic atlases, climate of oceanic regions in relation to marine activities (transport, fishing, etc.).

WMA 423: HYDRAULIC STRUCTURE I (2 units)

Need for hydraulic structures, types and their locations. Types of design – hydrologic. Design of simple hearing structures retaining walls, water bearing walls and tanks. River training-types of rivers, sedimentation and erosion, meandering of rivers, water ways and navigation, sluices, locks and gates, cutoffs, embankments, maintenance of river channels and beds. Hydropower – hydropower potential, classes of hydro-electric stations and components of hydro-stations. Hydraulic machines – reciprocating and centrifugal pumps, turbines – impulse and reaction turbines. Pelton Wheel, Francils turbine and Kaplan turbine. Wharves and jetties, river and seafronts, breakwaters. Design of minor irrigation scheme – hand turbewell, tradition methods of water lifting small earth dams.

WMA 501: HYDRO-METEOROLOGICAL FORECASTING I (2 Units)

Pre-requisites: WMA 308, 409

Statistical methods in Climatological and meteorological studies. Application of statistics in decision-making and objective analysis of boundary layer climatology. Weather analysis and forecasting reviews. Critical appraisal of forecast methods and products. Hydrological forecasts and warnings. Classification of hydrological forecasts, Hydrological forecasting services, operations, organization, collection of data and issue of forecasts and warnings, use of radar observation for meteorological and Hydrological forecasting services.

WMA 502: HYDRO-METEOROLOGICAL FORECASTING II (2 Units)
Pre-requisite: WMA 501
Forecasting methods: Seasonal and annual flow forecasts, stages and flows, flood forecasts, formulation, evaluation and verification of hydrological forecasts, formulation of hydrological forecasts, evaluation of forecasting methods, relation between Meteorological and Hydrological forecasting, cost-benefit analysis for hydrological forecasting, forecasting, forecasting meteorology in relation to drought, flooding, blizzards, erosion and prevention of forest fires.

WMA 503: WATER RESOURCES PLANNING AND MANAGEMENT (3 Units)
Pre-requisite:CVE 322, CVE 421.
Quantity survey – unit price, bill of quantities, contract procedure and management. Contract law, pretender planning and preparation. Project appraisal – comparison of alternatives, feasibility study technical feasibility and economic feasibility planning of water resources – general elements of planning. Stages of development plan;
Multipurpose and single purpose planning. Project formulation. Introduction to CPM, PERT and operations research and systems analysis. Use of statistics and computer in planning and management of irrigation and other water resources projects. Water policy, water law and water administration – water policy as it relates to Nigerian conditions, Federal and State, water law-common law, Riparian rights, Inter-State and International boundaries as they relate to water rights and limitations, water administration – line and Staff organizations. Structure of organizations – Federal level, State level, Nigerian drainage basins, river basin development authorities, water corporations, water boards, research institutes and relevant ministries/directorates.

WMA 507: AGRO-METEOROLOGY IV (3 Units)
Pre-requisite: WMA 411
Quantitative characterization of plants climatic environment. Statistical concept in plant climate relationship. Assessment of moisture and thermal Agro-meteorological indices for agriculture: predicting the onset, cessation and duration of the rains, rainfall variability, rainfall seasonality and precipitation effectiveness. Climatological assessment of water resources and soil loss. The concept of potential Evapotranspiration, crop moisture requirements and irrigation need: methods of improving water use efficiency, Concept of photosynthetic active radiation (PAR) and efficiency of energy conversion. Measurement of photosynthesis in the field, Quantification of crop yield-climate relationships under different management inputs; Pearson product moment correlation, simple linear regression analysis, principle component and factors analysis. Elementary stochastic models.

WMA 508: AGRO-METEOROLOGICAL METHODS AND APPLICATIONS. (3 Units)
Agro-meteorological statistics and models for prediction: random variables and probability theory, probability (prior-posterior) likelihood, Baye's theorem,

independent, joint, conditional probabilities. Climatological series. Description of population by means of frequency distribution. Estimation problems: empirical frequency estimates, parametric estimation, etc.; test of hypothesis, relationship problems (correlation, simple and multivariate distributions, and correlation, regression (Linear, non-linear, multiple significant, non-significant regression coefficients in adjusted relations; discriminate analysis, factor analysis; time series: stochastic processes, Markov chain, spectral analysis. Computations: digital computers; programming; numerical models etc.

WMA 510: Watershed Management (3 Units)
Pre-requisite: CVE 322

Introduction: definitions, watershed management, importance, objective and relation with hydrology, watershed management and agriculture. Hydrologic cycle and water shed management: review of hydrologic cycle and its elements. Soil moisture and its measurement. Soil moisture, runoff and erosion interactions. Watershed management principles. Interception: Review of processes of interception. Measuring Interception: Gross, through fall and stream flow, impact of interception and watershed management. Importance and application. Watershed Morphology and Characteristics: watershed morphologic characteristics and their influence on stream flow. Physiographic characteristics: size, shape, elevation, slope, aspect and orientation. Geologic characteristics, Geologic composition of watershed. Drainage basin and stream features: drainage pattern, stream orders, stream lengths, stream (drainage) density, bifurcation ratio, stream frequency, stabilization ponds and septic tanks. Sludge treatment and disposal. Rural sanitation, solid waste collection and disposal.

WMA 511: AGRO-METEOROLOGICAL INSTRUMENTATION, OBSERVATION AND NETWORK DESIGN (3 Units)

General rules and procedures of meteorological observations and instrumentation (instrumentation, observation and recording of pressure, and temperature, atmospheric humidity, wind, sunshine and radiation, precipitation, soil temperature, soil moisture content and soil moisture tension, evaporation, evapotranspiration, interpretation and analysis of autographic charts, cloud classification, estimation of cloud base etc.)

Biological/phonological observations, (observation of soil condition, native plants, cultivated crops and trees, farm animals, diseases and pests). Instruments and method of observation: the choice of a site for an instrument enclosure, procedures for installation, maintenance, checking and calibration of instruments used in agricultural meteorology.

WMA 512: TROPICAL WEATHER SYSTEMS II (3 Units)

Trends in the study of tropical weather systems. Recent advances in the study of low

altitude weather systems. The mean state of the tropical atmosphere. The major producing systems in the tropics, tropical cyclones, tornadoes, monsoon depressions, easterly wages, thunderstorms, synoptic disturbances in the tropics. The disturbance line of West Africa. Inter-tropical convergence zone (ITCZ). Designation of tropical storm development regions. Models of prediction in the tropics – the single and multi-level models.

Stratospheric ozone depletion, El Nino and La Nina phenomena, relationship with tropical cyclone in the tropics and their typical global impacts. Application of tropical weather systems to human health, food and water supply, building designs and urban planning. Global climate change and tropical climate. Drought and desertification in the tropics.

WMA 513: HYDRAULIC STRUCTURES II (2 units)

Design of reservoir. Site selection. Types and zones of storage. Reservoir yield. Safe yield. Fixation of storage capacity by mass curve method, residual mass curve method. Reservoir sedimentation. Dams; classification according to use, design and materials. Design of gravity dams, earth and rock-fall dams. Forces acting on dams, design considerations including seismic forces. Design of small earth dams. Physical factors governing selection of types of dams; selection of site of a dam. Spillways, types of spillways, straight, drop, ogles, side channel, shaft and siphon. Design of an ogee spillway, dynamic forces on spillways. Spillway crest gates. Energy dissipaters; type of energy dissipaters below overflow spillway and their selection. Hydraulic design of stilling basins and bucket type energy dissipaters. Outlet works; sluiceways and intakes. Intake structure, design principles, silt control device. Design of weir. Design of impervious regulator, silt control devices at head-works.

WMA 516: WATER RESOURCES AND PUBLIC HEALTH (3 Units)

Springs: Types of springs, location spring development, spring protection. Surface water: Rivers and streams water. Methods of exploiting surface water, infiltration galleries, bank filtration, micro dams and reservoirs. Rain water catchment. Excreta disposal: septic tanks and soak away pits. Appropriate sewerage Disposal of sewage in constructed wet lands. Appropriate drainage: Urban drainage, rural drainage and on-farm drainage. Land use and environmental quality. Rural well construction methods. Community participation in rural projects: conception, planning, feasibility, execution (development) operation and maintenance. Gender issues in community projects. Case studies in operation and maintenance of hand pump project etc.

COLLEGE OF FOOD SCIENCE AND HUMAN ECOLOGY

Background Information

College of Food Science and Human Ecology was created in 2009 from the splitting of the former College of Agricultural Management, Rural Development and Consumer Studies (COLAMRUCS) into two separate Colleges; the other sister College being College of Agricultural Management and Rural Development. The College adopted its acronym "COLFHEC" like its other counterparts in the University.

The College of Food Science and Human Ecology comprises of four Academic Departments, namely:

- Department of Food Science and Technology
- Department of Home Science and Management
- Department of Hospitality and Tourism
- Department of Nutrition and Dietetics

Vision

To be the foremost College recognized for human resource development in the areas of Food Science and Human Ecology for the advancement of good quality of life and sustainable development.

Mission

To promote excellence in knowledge generation and transfer in the areas of Food Science and Human Ecology through teaching, strategic research and community

engagement.

Dean's Office

Name	Qualification	Designation
M. A. Idowu	B.Sc, M.Sc. (Ife), Ph.D. (Ogbomoso)	Professor & Dean
Kikelomo O. Adubi	NCE, B.Ed.(Zaria), M.Sc, Ph.D. (Ife)	Reader and Deputy Dean

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

The Department of Food Science and Technology was established in 1983 as one of the programmes of the then Federal University of Technology, Abeokuta (FUTAB). It is one of the programmes that survived the various transitions prior to the establishment of the University of Agriculture, in 1988. Today, the department of Food Science and Technology is one of the four Departments in the College of Food Science and Human Ecology (COLFHEC). The department offers programmes leading to the award of Bachelors, Masters and Doctoral degrees in various areas of Food Science and Technology.

Philosophy and Objectives

The economic well-being of Nigerians requires that food processing sector must produce enough high quality food products, especially during the off-peak seasons and distribute them at competitive prices to a rapidly growing population. The correct choice and application of appropriate technology is vital to reduction of post-harvest losses, processing, preservation and storage. Food processing, storage and preservation therefore represent an important linkage to agriculture which must not be ignored.

The field of Food Science and Technology is based on a spectrum of fundamental aspects of basic sciences (Mathematics, Physics, Chemistry and Biology), with a broad background in engineering applications (thermodynamics, unit operations in food processing, fluid flow behaviour, equipment design and maintenance). The study of properties of food raw materials, their composition, appropriate storage and preservation and application of engineering principles in processing and preservation are thus in the direct purview of a Food Scientist. Therefore, the general philosophy of the programme is to adopt multi-disciplinary approach in training of students to give a broad base knowledge in all aspects of Food Science and Technology such that our graduates can choose to specialize in any of the relevant disciplines.

In order to achieve the above stated mandate, the Department is committed to achieving the following goals

- ✓ To make the Department a centre of excellence in the training of Food Scientists and Food industry professionals.
- ✓ To focus research efforts on areas of relevance to our immediate environment and local and global food situations.
- ✓ To encourage inter-disciplinary cooperation in research among staff and other external affiliations.
- ✓ To train competent future leaders for the agro-industrial sector, government establishments and society, who are sensitive to socio-economic needs and dedicated to providing solutions to pressing food security and economic

problem of the country.

Academi Staff

NAME	Qualification	Specialization	Designation
O. P. Sobukola	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food Processing and Storage Technology	Reader & Ag. HOD
S. O. Awonorin	M.Sc., Ph.D. (Leeds)	Heat and Mass Transfer	Professor
O. B. Oyewole	B.Sc. (Ife), M.Sc., Ph.D. (Ibadan)	Food Microbiology and Biotechnology	Professor
Folake O. Henshaw	B.Sc. (Ife), M.Sc. (Strathclyde), Ph.D. (Ibadan)	Food Processing and Preservation	Professor
L. O. Sanni	B.Sc. (Abeokuta), M.Sc., Ph.D. (Ibadan)	Food Technology	Professor
M. A. Idowu	B.Sc., M.Sc. (Ife), Ph.D. (Ogbomoso)	Food Chemistry and Analysis	Professor
T. A. Shittu	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food Process Engineering	Professor
A. A. Adebowale	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food Processing and Storage Technology	Reader
A. O. Obadina	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food Microbiology	Reader
Ganiyat O. Olatunde	B.Sc., M.Sc. (Ibadan), Ph.D. (Abeokuta)	Food Chemistry and Quality Control	Senior Lecturer
Olatundun E. Kajihausa	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food Processing and Storage Technology	Senior Lecturer
Adebukola T. Omidiran	B.Sc., M.Sc.Ph.D(Abeokuta)	Food Quality Control and Assurance	Lecturer II

100 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 101	General Biology I	2	2	-	-
BIO 103	Introduction to Physiology	2	2	-	-
BIO 191	Practical Biology I	1	-	-	1
CHM 101	Introductory Physical Chemistry	3	3	-	-
CHM 191	Practical Chemistry I	1	-	-	1
MTS 101	Algebra	3	2	1	-
PHS 101	General Physics I	3	3	-	-
PHS 191	Physics Laboratory I	1	-	-	1
GNS 101	Use of English	2	2	-	-
GNS 102	Introduction to Nigerian History	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
	Total	**20**	**16**	**1**	**3**

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
AEM 102	Principles of Economics	2	2	-	-
BIO 102	General Biology II	2	2	-	-
BIO 192	Practical Biology II	1	-	-	1
CHM 102	Introductory Organic Chemistry I	2	1	-	1
CHM 104	Introductory Inorganic Chemistry	2	2	-	-
CHM 192	Practical Chemistry II	1	-	-	1
MTS 106	Calculus for Biological Sciences	3	3	-	-
PHS 106	General Physics II	3	3	-	-
PHS 192	Physics Laboratory II	1	-	-	1
	Total	**17**	**13**	**-**	**4**

200 Level: First Semester

Course Code	Course Title	U	L	T	P
FST 201	Introduction to Food Technology	2	2	-	-
PHS 245	Basic Physics for Engineering Appl.	2	2	-	-
ABE 223	Technical Drawing I	2	-	-	2
CHM 231	Basic Physical Chemistry I	2	2	-	-
CHM 211	Inorganic Chemistry II	2	2	-	-
CHM 291	Experimental Chemistry I	1	-	-	1
PCP 201	Principles of Crop Production	3	2	-	1
MTS 201	Mathematical Foundation	3	2	1-	-
GNS 204	Logic and History of Science	2	2	-	-
ABE 321	Workshop Practice and Farm Shop	2	-	-	2
	Total	**21**	**14**	**1**	**6**

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
FST 202	Food Biochemistry	3	2	-	1
FST 204	Introduction to Engineering Thermodynamics	3	2	-	1
FST 206	Fundamentals of Heat & Mass Transfer	2	2	-	-
CHM 222	Basic Organic Chemistry II	2	2	-	-
CHM 292	Experimental Chemistry II	1	-	-	1
CHM 232	Basic Practical Chemistry II	2	-	-	2
CHM 212	Basic Inorganic Chemistry II	2	2	-	-
APH 202	Introduction to Animal Agriculture	3	3	-	-
ABE 224	Technical Drawing II	2	1	-	1
CVE 202	Strength of Materials	2	1	-	1
	Total	**22**	**15**	**-**	**7**

300 Level: First Semester

Course Code	Course Title	U	L	T	P
NTD 301	Human Nutrition	2	1	-	1
FST 305	Basic Microbiology	3	2	-	1
FST 309	Food Chemistry	3	2	-	1
MCE 205	Fluid Mechanics I	3	2	1	-
STS 201	Applied Statistics for Non Majors	3	2	1	-
CSC 201	Introduction to Computer Science	3	2	1	-
AEM 301	Principle of Production Economics	2	2	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 202	Element of Politics and Government	1	1	-	-
GNS 203	Use of Library	1	1	-	-
	Total	**22**	**16**	**3**	**3**

300 Level: Second Semester

Course Code	Course Titles	U	L	T	P
FST 304	Food Microbiology	3	2	-	1
FST 306	Principles of Sensory Evaluation	2	1	-	1
FST 310	Food Rheology	2	2	-	-
PHS 362	Introduction to Material Science	3	3	-	-
PHS 364	Energy and Environment	1	1	-	-
FST 312	Unit Operations in Food Processing	3	2	-	1
FST 314	Principles of Food Analysis	2	2	-	-
FST 316	Chemical and Instrumental Analysis	2	1	-	1
FST 318	Food Engineering Applications	2	2	-	-
ETS 206	Entrepreneur Studies and Change Management	2	2	-	-
	Total	22	18	-	4

400 Level: First Semester

Course Code	Course Titles	U	L	T	P
FST 401	Food Quality Control and Plant Sanitation	3	2	-	1
FST 403	Fruit and Vegetable Technology	3	2	-	1
FST 405	Dairy Science and Technology	3	2	-	1
FST 407	Food Product Development	3	2	-	1
FST 409	Food Plant Design and Pilot Demonstration	4	2	-	2
HRT 503	Post-Harvest Physiology and Produce Storage	3	3	-	-
FST 413	Scientific Writing and Presentation	2	2	-	-
	Elective	2	2	-	-
	Total	23	17	-	6
Electives					
FST 411	Malting and Brewing	2			
FST 415	Survey of Food Industries	2			

400 Level: Second Semester

Course Code	Course Titles	U	L	T	P
FST 490	Industrial Activity	6	-	-	6
FST 492	SIWES Seminar	2	-	-	2
FST 494	SIWES Report	5	-	-	5
FST 496	SIWES Visitation	3	-	-	3
	Total	**16**	**-**	**-**	**16**

500 Level: First Semester

Course Code	Course Titles	U	L	T	P
FST 501	Cereal and Tuber Technology	3	2	-	1
FST 503	Meat Science and Technology	3	2	-	1
FST 505	Fats and Oil Technology	3	2	-	1
FST 507	Food Additives, Toxicology and Safety	3	2	-	1
FST 509	Food Packaging	3	2	-	1
FST 511	Food Machinery	2	2	-	-
FST 513	Business Management for Food Technologist	2	2	-	-
FST 597	Seminar I	1	-	-	1
	Elective	3	3	-	-
	Total	**24**	**17**	**-**	**7**
Electives					
AEM 509	Project Management	3	-	-	-
FST 515	Food Irradiation Technology	3	-	-	-

500 Level: Second Semester

Course Code	Course Titles	U	L	T	P
FST 502	Fermented Foods Technology	3	2	-	1
FST 504	Technology of Miscellaneous Food Commodities	3	2	-	1
FST 506	Processing Control and Automation	3	2	-	1
FST 508	Food Biotechnology	3	2	-	1
FST 512	Entrepreneurship for Food Technologist	2	2	-	-
FST 598	Seminar II	1	-	-	1
FST 599	Project Report	4	-	-	4
FST 510	Nigerians' Food and Industrial Raw Materials	3	3	-	-
	Elective	3	3	-	-
	Total	**25**	**16**	**-**	**9**
Electives					
ARD 504	Introducing Technological Changes in Food and Agriculture	3	-	-	-
ARD 502	Principles and Practice of Agricultural Extenton I	3	-	-	-

COURSE SYNOPSES

FST 201: INTRODUCTION TO FOOD TECHNOLOGY (2 UNITS)

Philosophy and definition of food technology; and food science/technology interface. Review of global food situation with emphasis on Nigeria: the role of agriculture in supplying food needs for economic growth and development. Current food problems. Physical, chemical and biological principles of food processing, preservation and storage. Engineering units, dimensions and principles applicable to the food industry. Interaction between food, agriculture and nutrition. The multiple roles of food technologies in the society.

FST 202: FOOD BIOCHEMISTRY 3 (UNITS)

Historical development and scope of biochemistry in relation to foods. Structure, classification, occurrence, nature and properties of naturally occurring constituents of foods. Water and its properties, protein systems in foods, factors affecting protein quality; food enzymes, enzyme reaction rate and activation energy, factors affecting enzyme activity, carbohydrates during food processing. Lipids in foods – saturation and unsaturation, vitamins and natural pigments – carotenoids, chlorophyll, anthocyanins; flavours and flavonoids in foods.

FST 204: INTRODUCTION TO ENGINEERING THERMODYNAMICS (3 UNITS)

Basic concepts; definitions; first and second laws, ideal gases; heat and work; corollaries of laws and their consequences; application to open and closed systems.

Flow and non-flow processes such as turbines, compressors, evaporators, combustion, nozzles, diffusers.
Steady state equation (Bernoulli's equation) and applications. Heat cycles; carnot cycle; properties of pure substances; use of steam tables.

FST 206: FUNDAMENTALS OF HEAT AND MASS TRANSFER (2 units)
Heat, mass and momentum transfer theories – conduction, convection and radiation processes as applied to food engineering, processing and storage. Calculations involving energy gains and losses. Natural, forced convection under laminar, turbulent or mixed flow conditions. Principles of mass transfer and diffusion processes.
Use of dimensional analysis and empirical correlations in heat and mass transfer. Use of heat exchangers and economic selection among various exchangers based on parallel and counter – flow arrangements. Determination of convective and overall heat transfer coefficients. Psychrometric properties of air and air-water mixtures.

FST 304: FOOD MICROBIOLOGY (3 UNITS)
Natural flora of importance in foods, and their behaviour and uses in the food industry; indicator, pathogenic and spoilage micro-organisms; microbiology of water supplies; contamination from sewage; handling; processing dust, etc. Food and water-borne diseases; food infections and toxicants; identification of food-poisoning micro-organisms. Laboratory methods of assessing microbiological status of different classes of food commodities – beverages, cereals, roots and tubers; fruits and vegetables, meat, fish and dairy products. Microbiological standards and criteria. Indices of food sanitary quality.

FST 305: GENERAL MICROBIOLOGY (3 UNITS)
Historical development and scope of microbiology. Functional classification and morphology of micro-organisms, microbial nomenclature-fungi, algae, bacteria, viruses, protozoa, Rickettsia and cultivation and isolation of micro-organism – use of microscopy, culture media, staining methods, maintenance of cultures. Microbial physiology and biochemistry; reproduction; useful and harmful micro-organisms. Public health considerations of micro-organisms.

FST 306: PRINCIPLES OF SENSORY EVALUATION (2 UNITS)
The human senses of olfaction and gestation, taste and smell receptors; mechanism of taste and smell perception; organoleptic assessment of processed foods to determine accessibility – operating conditions for sensory testing, assessment methods and scores. Statistical interpretation of data. Sensory evaluation from the perspectives of marketing; research and product development.

FST 309: BASIC FOOD CHEMISTRY (2 UNITS)
Physical and chemical changes occurring in foods during handling, processing and

storage. Moisture in foods. Hydrogen bonding, free and bound moisture, lipids in foods – fats and oils, fatty acids, phospholipids and derived lipids. Chemical and physical properties of natural fats and oils. Flavour changes in fats and oils, Determination of lipids, auto oxidation of unsaturated fatty acids, pro-oxidants, and antioxidants in foods. Methods of measurement of changes in food lipids. Hydrogenation and inter-esterification of lipids. Proteins in foods. Physical and chemical properties of proteins. Nature and denatured proteins, gel formation. Pure proteins from some foods; plant proteins, animal proteins used as food e.g. gluten of wheat, casein of milk, whey proteins.

Food carbohydrates, monosaccharides, disaccharides, oligosaccharides and polysaccharides. Pectic substances and plant hydrocolloids. Changes of carbohydrate on cooking – gelatinization retrogradation, modifications of starches and applications of modified starches. Enzymes systems important to food quality and application in the food industry. Browning reactions. Enzymes and non-enzymic browning reactions – Nature, occurrence and inhibition. Vitamins and Natural pigments in food; water soluble and fat soluble vitamins, physical and chemical properties of vitamins and their stability in foods. Food flavours and additives and their roles in foods and significance in organoleptic analysis.

FST 310: FOOD RHEOLOGY (2 UNITS)

Deformation elasticity and flow; shear, Newtonian and Non-Newtonian flow; viscometry of fluid food materials, dilute and concentrated food suspensions; sedimentation; rheopexy (thixotrophy); viscoelasticity. Dynamics of fluid flow applications. Flow in a curved path, radial flow, vortex free and forced vortex flow. Real and ideal fluids, velocity distribution, boundary layer and separation. Frictional losses in flow through pipes, fittings, bends and drag, etc.

FST 312: UNIT OPERATIONS IN FOOD PROCESSING (3 UNITS)

Units and Dimensional analysis. Basic principle of unit Operation in Food Process Engineering material and energy balance. Material handling and related preliminary operations such as cleaning, grading and sorting. Mechanical separation: sedimentation, centrifugation/cyclone separation, sieving and particle size analysis. Membrane separation processes – theory and applications of distillation extraction, expression, reverse osmosis. Contact equilibrium separation processes – theory and applications of absorption, extraction, crystallization and exchange absorption. Evaporation – multiple effects, principles and types.

FST 314: PRINCIPLES OF FOOD ANALYSIS (2 UNITS)

Proximate analysis of food; analysis of moisture, crude fat, crude protein, crude fibre, ash and total carbohydrate. Determination of important food constituents including food colours, trace elements and contaminants. Other methods of protein determination apart from total Nitrogen by Kjedahl method.

Determination of free and bound lipids. Gravimetric/Volumetry and colometry methods of sugar determinations; Lane – Eynon method, Musin – Walker method and Dubois methods.

FST 316: CHEMICAL AND INSTRUMENTAL ANALYSIS OF FOODS (2 UNITS)

Fundamental concepts in quantitative measurements – mole concepts, mole fraction, Units of concentration. Basic stoichiometric calculations. Sampling techniques and methods of sample preparation. Basic principles of chemical and instrumental analysis such as Gravimetry, volumetry, colourimetry, photometry, chromatography, refractometry, polarimetry, and adsorptimetry and polarography.

FST 318: FOOD ENGINEERING APPLICATIONS (2 UNITS)

Thermophysical properties of Food: Glossary of thermophysical properties of foods and methods of determinations, Relevance to food processing, Food composition versus thermophysical properties. Thermal processing: Retort processing and controls; thermal death time equivalent; Relevance and calculation of D, Z, Q_{10} values for some thermal treatments. Application of fluid flow theory: Basic fluid properties; fluid transportation system in food processing, components classification and selection criteria; pumping power requirement and classification. Food dehydration theory and Applications: Drying theory, calculations of drying rate, time and equilibrium moisture content; dehydration equipment, classification and selection.

FST 400: INDUSTRIAL ACTIVITY (6 UNITS)

Students would be attached to various standard food and beverage industries for one semester and two long vacations, thus, making a total of nine months under the students' industrial work experience scheme (SIWES) and the students' work experience programme (SIWEP). Students would be expected to receive sufficient practical training in production, quality control, engineering and maintenance as well as marketing under strict industrial conditions and supervision. Detailed activities carried out during the period using guided form as approved by the department will be submitted by all students. The detailed industrial activity is expected to be endorsed by the industry based supervisor as well as an academic staff attached to the student.

FST 401: FOOD QUALITY CONTROL AND PLANT SANITATION (3 UNITS)

Historical background and definitions; scope; significance, meaning of quality and control. Quality in relation to reliability, price, delivery, accounting, purchasing; case studies of organization of quality control in typical food companies, setting specifications for microbiology, chemical and entromological standards. Statistical quality control – types of errors and decision making; control charts for variables and attributes – construction and uses; sampling plans, sensory quality control – assessment scores and interpretation of data. The codex Alimentarius legislation and

codes of practice. Biological and aesthetic problems of poor plant sanitation, waste and affluent disposal; plant design, installation and operation for cleaning purposes; disinfection, sterilization and detergency in processing area; cleaning by dismantling; cleaning-in-place technology, personal hygiene in the food factory.

FST 402: SIWES SEMINAR (4 UNITS)

Students that went through the industrial training period are expected to make an oral presentation of their activities during the period under review at a departmental organized seminar. Academic staff present will grade the presentation of the students using the standard approved guidelines.

FST 403: FRUITS AND VEGETABLES TECHNOLOGY (3 UNITS)

Handling of fresh fruits and vegetables, chemical control of enzymic and non-enzymic changes, grading, sorting, and cleaning. Peeling, sampling and size reduction. Raw materials for the fruits and vegetables industry – citrus, mangoes, onions, bananas, etc., botanical characteristics, composition, harvesting, storage and preservation, controlled Atmosphere technology. Canning of fruits and vegetables – theory and applications; Dehydration processes including freeze-drying, spray-drying and sun drying; processing of fruit drinks and juices, jams and preserves, tomato paste products and pickles. Techniques of blanching, clarification, stabilization and can-sterilisation.

FST 404: SIWES REPORT (4 UNITS)

Detailed report of students' experiences and activities during the period of attachment would be submitted by each student. The format for report presentation is as approved by the department.

FST 405: DAIRY SCIENCE AND TECHNOLOGY (3 UNITS)

An overview of the Nigerian dairy industry and milk as a raw material. Factors affecting secretion and composition; milk-borne diseases and elementary milk testing procedures; milking techniques. Methods of heat treatment, bottling and packing principles, objectives, procedures and equipment for pasteurization, sterilization, concentration and homogenization of milk. Outline of methods of production, properties, handling and storage of market milk, cream milk powder, butter, cheese, concentrated milk, condensed milk, dried milk and yoghurt, whey disposal and utilization. Plant cleaning and sterilization. Contribution of milk to human nutrition.

FST 406: SIWES VISITATION (4 UNITS)

This involves on-site assessment of the student by the University based supervisor after visitation.

FST 407: FOOD PRODUCTS DEVELOPMENT (3 UNITS)

Product concept from the business perspective – differentiations between product item, line and mix, product life cycle, basic consideration for new product development or improvement; strategies and sequence of steps in test marketing; product failure/elimination; feasibility report preparations. Students would use specific practical projects in the laboratory to obtain experience in developing information and applying it to decision making as often encountered in the food industry. An integrated application of basic knowledge of chemical, physico-chemical, engineering, sensory and management principles to the processing, preservation and storage of foods will be required. A detailed report submitted at the end of the project would contribute a major part of the students' assessment in this course.

FST 409: FOOD PLANT DESIGN AND PILOT DEMONSTRATION (3 UNITS)

Food factory plant layout and construction – floor, roof, wall, ventilation, operation and cleaning. Economics of process design and optimization techniques: optimum design of food processing plants. Preparation of detailed flow sheets, calculations and layout for specific food processes; project appraisal; practical pilot demonstration on specific process plants e.g. gari, fish-smoking, fruit juice processing, etc.

FST 411: MALTING AND BREWING (2 UNITS)

Types and structural composition of barley and sorghum grains, preparation of grain, malt-germination, modification, kilning an biochemical changes involved. Mashing processes, factors affecting mashing, biochemistry of mashing, boiling of wort, beer conditioning and beer quality.

FST 413: SCIENTIFIC WRITING AND PRESENTATION (2 UNITS)

Scientific communication. Types of written communication, journals, bulletins, abstracts, etc. Types of oral communication, seminar, conferences, talks and art of oral presentation. Scientific writing. Library use and bibliographic search in the food science and technology related areas. Modern information technologies (Information), scientific networking, computer data-bases, Compact-Disc-Read-Only-Memory (CD ROM) technology, on line information and computer conference, optical discs. Scientific illustrations (figures, tables, plates). Each student will present oral and written reports for grading based on a survey of literature on recent developments in an area of current interest in the field of food science and technology.

FST 415: SURVEY OF FOOD INDUSTRY (2 UNITS)

This will involve a survey of the operations, activities and problems in a selected food industry. The survey may involve cottage, small, medium or large scale food

industries. Case studies may cover all or commodities, equipment, services or specific problems in the food industry. Students will be assessed on the basis of their orientation to the task and final written reports on the survey.

FST 400 – FST 406: STUDENTS INDUSTRIAL TRAINING (16 UNITS)

Students would be attached to various standard food and beverage industries for one semester and two long vacations, thus, making a total of nine months under the Students' Industrial Work Experience Scheme (SIWES) and the students' work experience programme (SIWEP). Students would be expected to receive sufficient practical training in production, quality control, engineering and maintenance as well as marketing under strict industrial conditions and supervision. Detailed report of student' experiences and activities during the period of attachment would be submitted by each student's. These records and other factors would be assessed; including oral presentation of experience at students' seminar and on-site assessment in the industry by University and industry based supervisors will be used for grading the students.

FST 501: CEREALS AND TUBERS TECHNOLOGY (3 UNITS)

Types of cereal and tubers – botanical characteristics, composition, and properties, flour milling from maize, sorghum, millet, cassava, yams, cocoyams, etc. Chemical, physical and physiological changes in cereals and tubers during storage and handling. Methods of preservation. Technology of composite flours and flour confectionery products (e.g. macaroni, spaghetti, etc). Processing technology for cereals (maize, rice, sorghum, wheat) and tubers (cassava, yams and cocoyams). Cereals and tuber enrichment technologies.

FST 502: FERMENTED FOODS TECHNOLOGY (3 UNITS)

Alcoholic fermented foods traditional to Africa, including palm wine, pito, burukutu – science and technology. Processing technology of local and oriental fermented condiments – tofu, tempeh, matto, 'iru/dadawa, ogiri, ugba'. Basic operations in industrial fermentations – fermentors and fermentor operations; extraction of fermentation products. Recent advances in the manufacture of alchoholic beverages in Nigeria. Use of micro-organisms in the industrial production of vinegar, yoghurt, vitamins, amino acids and flavours.

FST 503: MEAT SCIENCE AND TECHNOLOGY (3 UNITS)

Science and technology of converting meat-type animals to human food; anatomy, physiology and histology of domestic animals. Introduction to slaughter and dressing of table birds; curing, canning and drying of fresh meat; intermediate moisture meat. Factors affecting meat quality – physical, chemical, microbiological and management. Traditional and scientific principles involved in the processing technology of meat products – sausages, ham, bologna, frankfurters, salting, boiling, smoking, curing, etc. Principles, practices and equipment for fish refrigeration and freezing, drying, salting,

smoking, pickling, canning and irradiation of fish protein concentrate, meal, sauces and other fish products; product quality considerations. Egg quality, handling, freezing, pasteurization, drying. Production, quality control, storage and utilization of egg and poultry meat products.

FST 504: TECHNOLOGY OF MISCELLANEOUS FOOD COMMODITIES (3 UNITS)
Botanical characteristics, composition, properties and processing of non-alcoholic beverages from cocoa, tea, coffee, kola, herbs and spices, sugar confectionery and soft drinks. Recent advances in the manufacture of non-alcoholic beverages in Nigeria. Nutritional value of non-alcoholic beverages.

FST 505: FATS AND OILS TECHNOLOGY (3 UNITS)
Status of the oils and fats industry in Nigeria; oil seeds of Nigeria – characteristics, composition and uses. Raw materials for the vegetable oil industries – palm, coconut, groundnut, soyabeans, cottonseed, sunflower seed; effect of climatic conditions, harvesting and storage on quality of glycerides. Refining of oil and storage quality indices.

FST 506: PROCESS CONTROL AND AUTOMATION (3 UNITS)
Introduction to process control and instrumentation – measuring instruments including oscilloscopes, graphics, thermocouples, sensors, accelerometers, AC and DC motors. Process requirements in the food industry. Methods of control – block diagrams, open and feedback systems, stability problems; Laplace transform, transfer function and application. Types of controllers and control actions; frequency – response analysis of elements; transient and steady state solutions; prediction of transient response, optimum control setting methods, control of processes with time delay; electrical devices and applications in food processing. Forms of signals; damping factor and critical conditions, control values and transmission lines; process dynamics e.g. control of heat exchanger, error detector and transducers, electric alarms, heat detection alarm, time relay, temperature relay, remote control, etc – applications of these control devices in food processing operations.

FST 507: FOOD ADDITIVES, TOXICOLOGY AND SAFETY (3 UNITS)
Food additives and contaminants; importance and safety, legitimate and illegitimate uses; the GRABS and regulations affecting use of food additives; including chemical preservatives, organic and inorganic microbial antagonists, and quality improvers, such as flavourings, buffering and neutralizing agents. Sources of toxins; interaction of toxic synthetic chemicals with food antagonists and promoters. Food processing and food toxins – haemaglutinins, antivitamins, protein inhibitors, etc. Toxic from food – carcinogenic glucogenic glucosides, steroidal alkaloids, microbial toxins (mycotoxins, etc.) Hazards from pesticide residues. Concept of pollution and environmental toxicants – air, land, water, sound, and industrial effluents.

Environmental policies and future of food additives.

FST 508: FOOD BIOTECHNOLOGY (3 UNITS)

Introduction to Biotechnology – definition and scope. Tools of Biotechnology. Application of biotechnology to indigenous food production/fermentation, processes – current status and future prospects. Genes and Genetic engineering; the nucleic acids (RNA and DNA); DNA manipulations, Restriction and other enzymes used in genetic engineering; DNA/Genes cleaning; Vectors; Cutting and ligation of DNA. Fermentation technology and operations. Fermenters/Bioreactors; Genetic improvements of fermentation process. Enzyme technology; production of crude enzyme extracts. Isolation and purification of organic acids – citric and lactic acids. Food wastes – gasohol and biogas. Food conservation through cultural and harvesting practices. Utilization of food wastes through biotechnology processes.

FST 509: FOOD PACKAGING (3 UNITS)

Definition; role and importance of packaging. Principles of packaging, characteristics of packaging materials – classification and types. Manufacture and properties of flexible packaging materials – paper, and paper-board, regenerated cellulose, flexible plastic films, rigid plastic films. Manufacture and properties of aluminium plates, tin plates, or foils, wood and glass used in food packaging. Packaging requirements for fresh and processed foods for local and foreign markets. Effect of packaging on storability of different classes of foods. Packaging for food transportation and special handling. Testing for structural quality and performance of packaging materials. Legislation on packaging.

FST 510: NIGERIA'S FOOD AND INDUSTRIAL RAW MATERIALS (3 UNITS)

Classification of Nigeria's food and agro-industrial raw materials. Constraints to local raw material utilization. Local sourcing of raw materials; problems and prospects, processing characteristics and requirements; quality evaluation and specifications for household/industry use. Methods of processing on chemical composition and storage stability; nutritive value of Nigeria's food raw materials. Entrepreneurship in the raw material development area; resource utilization; upgrading of traditional harvesting and processing methods; conservation practices; conventional and unconventional raw materials. Role of government in promoting local raw materials.

511: FOOD MACHINERY (3 UNITS)

Layout and design features of a food processing factory and equipment with reference to engineering standards and practices. Planning considerations and choice of materials of construction of equipment; location of food factory; civil, mechanical and electrical provisions – water and electricity supplies, effluent disposal, storage spaces, building requirements (location of cafeteria and toilet facilities) and plant selection, etc.

Construction and operation of food equipment for cleaning, sorting, grading, mixing, homogenization, centrifugation and filtration. Application and types of electric motors and other powered or motorized machineries.

FST 512: ENTREPRENEURSHIP FOR FOOD TECHNOLOGISTS (2 UNITS)

Introduction to the concept of entrepreneurship in relation to Food Industry, Characteristics of and types of entrepreneurs in the Food and Allied Industries, Identifying problems and opportunities in the Food Industry, Creative problem solving profile, Developing a viable business model in the Food Industry, Entrepreneurial ethics and traits of notable entrepreneurs.

FST 513: BUSINESS MANAGEMENT FOR FOOD TECHNOLOGIST (3 UNITS)

Definitions, scope and importance of management in food business. The structure of organization in the food industry. Authority and Responsibility. Forecasting, planning and formulation of policy. Personnel administration, purchasing and stock control. The administration of production and production control. Business records and accounting. International Food Trade – Food laws, Codex Alimentarius. Industrial Relations.

FST 515: FOOD IRRADIATION TECHNOLOGY (3 UNITS)

Introduction to irradiation treatment of foods. Radiation chemistry and application in foods. Effects of radiation on food-borne microorganisms, insects and parasites. Use of irradiation for controlling of sprouting in roots and tubers. Irradiation decontamination of fruits and vegetables, fish, spices, condiments and other export crops. Codex Alimentarious and legislations on food irradiation.

FST 497: PRE-DATA SEMINAR (1 UNITS)

Each student under the supervision of an academic staff is expected to make an oral presentation of the project plan and/or literature review on the project topic at a pre-data seminar organized by the department. This presentation and be in any area of Food Science and Technology and takes place in the first semester of the final year. The research could be investigative, basic or applied but usually directed at solving an identified problem related to food.

FST 598: POST-DATA SEMINAR (1 UNITS)

All students that successfully presented a pre-data seminar are expected to make an oral presentation of their project findings in a seminar organized by the department. The seminar will normally be presented during the second semester of the final year.

FST 599: PROJECT REPORT (4 UNITS)

Completed project work will be presented in form of a report in the approved format of the department. A viva-voice defense involving an experience external examiner in the field of Food Science and Technology will be conducted and students assessed.

DEPARTMENT OF HOME SCIENCE AND MANAGEMENT

Background

The Department of Home Science and Management was established in 1988 at the inception of the University of Agriculture. From the onset, the Department offered a degree programme in Home Science and Management with options in Clothing and Textile, Nutrition and Dietetics, Child Development and Family Studies, Home Furnishing and Interior Decoration and Home Science Extension. With the establishment of the Department of Nutrition and Dietetics, the Department now has three options, viz: Clothing, Textile and Interior Decoration, Child Development and Family Studies, and Home Science Extension.

Philosophy of Home Science and Management

The field of study of Home Science and Management is concerned with the ways in which the quality of family life can be enhanced maximally, through optimum utilization of human and material resources. The programme thus covers a broad-bases instruction in child development, family dynamics, textile and clothing, extension, household and institutional resource management. The curriculum adopts effective techniques of instruction, laboratory practicals, field demonstration, workshops and Industrial Training. The curriculum also focuses application of the broad-based instruction to three major disciplines, viz: Chile development and family studies; Clothing and textiles; and Home Science Extension, towards enhancing quality family life.

Consequently, the Department of Home Science and Management trains the students in the three broad disciplines in order to ensure the production of highly skilled manpower, such that graduates of the programme can choose to specialize in any of the disciplines (options) for engaging in productive and economic ventures towards holistic wellbeing of the family.

Objectives of Home Science and Management

In order to achieve the above, the Department is committed to achieving the following goals:

1. To focus research effort on areas of relevance to our immediate environment, local and global family needs.
2. To make the Department a unique centre for vocational training and development of human resources.
3. To be in partnership with relevant local and international agencies in order to enhance quality experience of students in meeting demands of the labour market.
4. To encourage inter-disciplinary co-operation in research among staff, graduate students and international bodies.

Career opportunities in Home Science and Management

Career opportunities in Clothing and Textiles include:

Dress Making and Tailoring

- Upholstery making
- Bridal costume specialist
- Sport wear specialist
- Military costume specialist
- Household article specialist

Clothing and Textile Production

- Weaving
- Pattern developing / Pattern making
- Textile/Fabric design production
- Embroidery Designing

Consultancy

- Interior decorator /designer
- Wardrobe planner
- Event organiser
- Laundry operator
- Haberdashery dealer

Fashion

- Fashion designer and Model
- Fashion merchandiser and
- Fashion communicator/journalist
- Fashion accessories designing and production
- Millinery

Computer Aided Design programmer

Teaching/Lecturing

Researcher

Career opportunities in Child Development and Family Studies include:

Social work, counselling and psychology

- Youth and family services worker
- Child welfare specialist
- Social worker
- Child protective service worker
- Marriage and family therapy

- Rehabilitation counsellor
- School psychologist
- Early childhood specialist

Teaching and education

- Youth workers
- Health education
- Adult literacy teacher
- Day care or Pre-school/ Elementary/ High school teacher

Health careers

- Hospital's child and family life specialist
- Paramedical
- Occupational therapist
- Child life
- Public health administration
- Health educators

Research

- Survey researchers
- Political scientists
- Psychologist
- Sociologist

Career opportunities in Home Science Extension include:

- Teaching/ Lecturing (Primary, secondary and Tertiary Institutions)
- Extension Agents
- Change Agents
- NGOs
- Research Assistants
- Technical Assistants
- Rural Developers
- Programme Developers

Academic Staff

Name	Qualification	Specialisation	Designation
Abolanle O. Lasode	B.Ed., M.Ed. (Lagos), Ph.D. (Ilorin)	Guidance & Counselling	Senior Lecturer/ HOD
Julia T. Eni-Olorunda	B.Sc., M.Ed., Ph.D. (Ibadan)	Special Education (Developmental Disability) Health Management	Professor
Grace O. Sokoya	B.Sc.M.Ed,Ph.D.(Ibadan), Ph.D.(NATEL)	Gender and Family Studies	Professor
Adetoun A. Amubode	B.Sc.,M.Sc. (Abeokuta), Ph.D. (Southampton)	Clothing and Textile	Professor
*S. R. Ogunduyile	B.A. M.A. Ph.D. (Zaria)	Industrial Designs	Professor
Kikelomo O. Adubi	NCE, B.Ed. (Zaria), M.S., Ph.D. (Ife)	Home Science Extension and Rural Development	Reader
Motunrayo A. Ariyo	B.Ed., M.Ed., Ph.D. (Ibadan)	Counselling Psychology	Senior Lecturer
Olufunmilayo O. Braide	B.A., M.A. (Zaria), Ph.D. (Abeokuta)	Industrial Design and Textile	Senior Lecturer
O. J. Labode	ND (Lagos), B.A.(Benin), M.A.(Ibadan)	Visual Art History	Lecturer
O. A. Adeboye	B. Sc., M.Sc. (Abeokuta)	Clothing & Textile	Lecturer II
Bolanle M. Oyundoyin	B.Ed., M.Ed., Ph.D. (Ibadan)	Developmental Psychology/ Early Childhood Education	Lecturer II
E. A. Adebayo	B.Sc., MPH. (Ilorin) Ph.D. (Ibadan)	Child and Adolescent Health and Development	Lecturer II
Temitayo K. Adeboye	ND(Ibadan),B.Sc.(Abeokuta) M.Sc. (Portugal, Norway Sweden, Uganda)	Child Development and Family Studies/ Social Work	Assistant Lecturer
Olusola, O. Akinbode	B.Sc., M.Sc. (Abeokuta)	HomeExt. & Rural Dev. Human Dev.& Family Studies	Assistant Lecturer
Bukola O. Sowemimo	B.Sc., M.Sc. (Abeokuta)	Clothing & Textile	Assistant Lecturer
Taiwo P. Ajike	B.Sc.(Abeokuta), M.SW (Ibadan)	Child Development and Family Studies Health Social Work	Assistant Lecturer

100 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 101	General Biology I	2	2	-	-
BIO 103	Introductory Physiology	2	2	-	-
BIO 191	Practical Biology I	1	-	-	1
CHM 101	Introductory Physical Chemistry	3	3	-	-
CHM 191	Practical Chemistry I	1	-	-	1
MTS 105	Mathematics for Non-Major	3	2	1	-
PHS 105	General Physics for non-major	3	3	-	-
PHS 191	Physics Laboratory I	1	-	-	1
GNS 101	Use of English I	2	2	-	-
GNS 102	Introduction to Nigerian History and Social Structure	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
	Total	**20**	**16**	**1**	**3**

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
AEM 102	Principles of Economics	2	2	-	-
BIO 102	General Biology II	2	2	-	-
BIO 192	Practical Biology II	2	2	-	-
CHM 102	Introductory Organic Chemistry I	2	2	-	-
CHM 104	Introductory Inorganic Chemistry	1	1	-	-
CHM 192	Practical Chemistry II	2	2	-	-
MTS 106	Mathematics for non-major II	2	2	-	-
PHS 106	General Physics for non-major II	3	2	1	-
PHS 192	Practical Lab II	1	-	-	1
	Total	**17**	**15**	**1**	**1**

200 Level: First Semester

Course Code	Course Title	U	L	T	P
ABE 223	Technical Drawing I	2	-	-	2
AGR 201	General Agriculture	3	2	-	1
CSC 201	Introduction to Computer Science	3	3	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 202	Elements of Politics and Government	1	1	-	-
GNS 203	Use of Library	1	1	-	-
GNS 204	Logic and History of Science	2	2	-	-
HSM 201	Basic Design	2	-	-	2
NTD 201	Food Commodities	2	2	-	-
STS 201	Statistics for Agric. and Biological Sciences	3	2	1	-
NTD 103	Introduction to Nutrition & Dietetics	3	3	-	-
	Total	**23**	**17**	**1**	**5**

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
ARD 202	Principles and Practice of Agric. Extension	3	2	-	1
HSM 200	Introduction to Home Science and Management	2	2	-	-
HSM 202	Introduction to Textile and Fabric Design	2	1	-	1
HSM 204	Child Care and Development	2	2	-	-
HSM 206	Introduction to Clothing Techniques	2	2	-	-
HSM 208	Principles of Housing	2	2	-	-
HSM 210	Home Technology	2	1	-	1
HSM 212	Household Resources Management	2	2	-	-
HSM 214	Marriage and Family Relations	2	2	-	-
	Total	**19**	**16**	**-**	**3**

300 Level: First Semester (Child Development and Family Studies)

Course Code	Course Title	U	L	T	P
HRT 503	Post-Harvest Physiology and Storage	2	2	-	-
HSM 301	Clothing Construction	2	1	-	1
HSM 303	Research Methods in Home Science & Mgt.	2	2	-	-
HSM 307	Extension Teaching Methods	2	2	-	-
HSM 309	Family Life Education	2	2	-	-
HSM 311	Human Development & Growth I	2	2	-	-
HSM 317	Developmental Disability	2	2	-	-
HSM 325	Parenting the Child and Young Adult	2	2	-	-
HSM 327	Pattern Drafting and Design	2	-	-	2
HSM 315	Child Abuse and Family Violence	2	2	-	-
NTD 301	Human Nutrition	2	2	-	-
	TOTAL	**22**	**19**	**-**	**3**

300 Level: Second Semester

Course Code	Course Title	U	L	T	P
HSM 300	Industrial Activity	6	-	-	6
HSM 302	SIWES Seminar	3	-	-	3
HSM 304	SIWES Report	4	-	-	4
HSM 306	SIWES Visitation Report	3	-	-	3
	TOTAL	**16**	-	-	**16**

300 Level: First Semester (Clothing and Textile Option)

Course Code	Course Title	U	L	T	P
HRT 503	Post -Harvest Physiology and Storage	2	2	-	-
HSM 301	Clothing Construction	2	1	-	1
HSM 303	Research Methods in Home Science & Management	2	2	-	-
HSM 307	Extension Teaching Methods	2	2	-	
HSM 309	Family Life Education	2	2	-	
HSM 313	Home Furnishing and Management	2	1	-	1
HSM 321	Interior Decoration and Design	2	1	-	1
HSM 323	Nigerian Clothing and Textile Industries	2	2	-	
HSM 327	Pattern Drafting and Design	2	-	-	2
HSM 329	Principles and Techniques of Textile Design	2	1	-	1
	TOTAL	**20**	**14**	**-**	**6**

300 Level: Second Semester

COURSE CODE	COURSE TITLE	U	L	T	P
HSM 300	Industrial Activity	6	-	-	6
HSM 302	SIWES Seminar	3	-	-	3
HSM 304	SIWES Report	4	-	-	4
HSM 306	SIWES Visitation Report	3	-	-	3
	TOTAL	**16**	-	-	**16**

300 Level: First Semester (Home Science Extension)

Course Code	Course Title	U	L	T	P
HRT 503	Post - Harvest Physiology and Storage	2	2	-	-
HSM 301	Clothing Construction	2	1	-	1
HSM 303	Research Methods in Home Science &Mgt.	2	1	-	1
HSM 305	Programme Development and Planning in Home Science	2	2	-	-
HSM 307	Extension Teaching Methods	2	2	-	-
HSM 309	Family Life Education	2	2	-	-
HSM 311	Human Development & Growth I	2	2	-	-
HSM 313	Home Furnishing and Management	2	1	-	1
ARD 201	Introduction to Agricultural Extension & Rural Sociology	2	2	-	-
HSM 327	Pattern Drafting and Design	2	-	-	2
NTD 301	Human Nutrition	2	2	-	-
	TOTAL	**22**	**17**	-	**5**

300 Level: Second Semester

COURSE CODE	COURSE TITLE	U	L	T	P
HSM 300	Industrial Activity	6	-	-	6
HSM 302	SIWES Seminar	3	-	-	3
HSM 304	SIWES Report	4	-	-	4
HSM 306	SIWES Visitation Report	3	-	-	3
	TOTAL	**16**	-	-	**16**

400 Level: First Semester (Child Development and Family Studies)

Course Code	Course Title	U	L	T	P
HSM 407	Textile Production I	3	1	-	2
HSM 409	Advanced Resource Management	2	2	-	-
HSM 413	Family Dynamics and Changes	3	2	-	1
HSM 417	Org. and Management of Child Development Centres	2	1	-	1
HSM 423	Family and Community Counseling	2	1	-	1
HSM 429	Family and Community Health	2	2	-	-
HSM 431	Children's Literature	2	1	-	1
HSM 435	Organisation of Family and Child Welfare Programmes	2	2	-	-
HSM 439	Institutional Equipment and Management	2	2	-	-
HSM 415	Home Management Practicum	2	-	-	2
HSM 497	Seminar I	1	-	-	1
	TOTAL	**23**	**14**	**-**	**9**

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
ARD 504	Intro. Technological Changes in Agric. and Home Science	3	2	1	-
PHS 364	Energy and Environment	1	1	-	-
HSM 414	Design Consultancy	2	2	-	1
HSM 416	Adolescence and Adulthood	3	2	1	-
HSM 420	Human Development and Child Care II	2	1	1	-
HSM 434	Entrepreneurship Education in Home Science and Management	2	1	-	1
HSM 498	Seminar II	1	-	-	1
HSM 499	Project	4	-	-	4
Unrestricted Elective					
HSM 432	Nursery School Laboratory	2	1	-	1
	TOTAL	**20**	**10**	**3**	**7**

400 Level: First Semester (Clothing and Textile Option)

Course Code	Course Title	U	L	T	P
HSM 405	Weaving Techniques	2	-	-	2
HSM 407	Textile Production I	3	-	-	3
HSM 409	Advanced Resource Management	2	2	-	-
HSM 411	Advanced Construction and Tailoring Techniques	3	-	-	3
HSM 429	Family and Community Health	2	2	-	-
HSM 439	Institutional Equipment and Management	2	1	-	1
HSM 443	Fashion Drawing	2	-	-	2
ARD 505	Production and Use of Audio Visual Aids	2	1	-	1
HSM 415	Home Management Practicum	2	-	-	2
HSM 497	Seminar I	1	-	-	1
	TOTAL	**21**	**6**	**-**	**15**

400 Level: Second Semester (Clothing and Textile Option)

Course Code	Course Title	U	L	T	P
HSM 408	Textile Production II	2	-	-	2
HSM 410	Creative Fabrics	2	-	-	2
HSM 412	Applied Clothing Design	3	-	-	3
HSM 414	Design Consultancy	2	2	-	-
HSM 424	Fashion Design	3	-	-	3
HSM 434	Entrepreneurship Education in Home Science and Management	2	1	-	1
PHS 364	Energy and Environment	1	1	-	-
HSM 498	Seminar II	1	-	-	1
HSM 499	Project	4	-	-	4
Unrestricted Elective					
HSM 402	Advanced Weaving	2	-	-	2
HSM 418	Pattern Drafting and Design II	2	-	-	2
	TOTAL	**20**	**4**	**-**	**16**

400 Level: First Semester (Home Science Extension Option)

Course Code	Course Title	U	L	T	P
HSM 405	Advanced Weaving Techniques	2	-	-	2
HSM 409	Advanced Resource Management	2	2	-	-
HSM 429	Family and Community Health	2	2	-	-
HSM 439	Institutional Equipment and Management	2	1	-	1
HSM 441	Administration & Programme Planning in Extension	2	1	-	1
HSM 415	Home Management Practicum	2	-	-	2
AEM 503	Agricultural Marketing	3	2	1	-
ARD 501	Group Dynamics in Extension	3	2	1	-
ARD 505	Production and Use of Audio Visual Aids	3	2	-	1
HRT 501	Vegetables and Horticultural Crops Production	2	1	-	1
HSM 497	Seminar I	1	-	-	1
	Total	**24**	**13**	**2**	**9**

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
ARD 504	Intro. Technological Changes in Agric. and Home Science	3	2	1	-
PHS 364	Energy and Environment	1	1	-	-
HSM 404	Nigerian Cottage Industries	2	1	1	-
HSM 434	Entrepreneurship Education in Home Science and Management	2	1	-	1
HSM 410	Creative Fabrics	2	-	-	2
HSM 414	Design Consultancy	2	2	-	-
HSM 422	Design of Utility Areas in the House	2	1	-	1
HSM 498	Seminar II	1	-	-	1
HSM 499	Project	4	-	-	4
	TOTAL	**19**	**8**	**2**	**9**

Course Synopses for Home Science and Management Programme

HSM 200: INTRODUCTION TO HOME SCIENCE & MANAGEMENT (2 Units)

Philosophy, Objectives and Scope of Home Science and Management. History and development of Home Science Education in Nigeria. An introduction to and analysis of the careers and vocational opportunities available in Home Science. Role of Home Science Education in meeting individual development, needs of family, group and community Role of Home Science in individual and national development; Good grooming and looking good; Figure shapes and styles; Female figure shapes -Hour glass, Pear, Apple and banana; Male figure shapes- Ectomorph, Mesomorph, and Endomorph; Face shapes; Wardrobe planning; Basic forms of clothing; Steps and factors to be considered in wardrobe planning; and Clothes for special needs.

HSM 201: BASIC DESIGN (2 Units)

Basic design – Introduction to the basic elements of design, line, texture, value, tones, colours. Contours and outlines perspective – rules relating to observation. Drawing of simple geometric forms – cuboids, cones, cylinders. Definition of colour, concepts of colour, classes of colour, colour wheel and harmony. Principles of design-principles of design as concept used in organizing and arranging the structural elements of design-balance, proportion, rhythm, emphasis and harmony. Formation of motifs and pattern repeat system.

HSM 202: INTRODUCTION TO TEXTILE AND FABRIC DESIGN (2 Units)

Meaning and history of printing and dyeing. Exploration of various techniques of printing and dyeing fabrics. Tools and materials needed for printing and dyeing. Differences and similarities between printing and dyeing. Precautions and safety in dyeing. Batik and Starch resist design. Fabric design by bleaching or discharge dyeing. Exploration of various environmental and traditional African design motifs for printed and dyed fabrics. Theoretical procedure of printing process-shape, print position and print thickness.

HSM 204: INTRODUCTION TO CHILD AND HUMAN DEVELOPMENT (2 Units)

Concept of pre-natal development, stages of pre-natal development (the Germinal, Embryonic and Fetal) the fetuses sensory capacities – motion, vision and sound, maternal condition and pre-natal development; Nutritional influence on prenatal development; factors responsible for birth defects and disabilities; stages of labour, assessing baby's viability, sensory capacities of the new born; policies and programs relating to the gestational period.

HSM 206: INTRODUCTION TO CLOTHING TECHNIQUES (2 Units)

Clothing theories; clothing terms; functions of clothing; basic construction methods

and equipment; the sewing machine; parts and care of a sewing machine; machining and machine faults; stitches: temporary, permanent and embroidery stitches; even and un-even tacking and tailors' tacking, hemming, running, gathering, loop, back stitches, French-knot, chain, cross, stem. satin, feather, lazy daisy stitches; seams and seam finishes: French seam, open seam, closed seam, run and fell seam, edge stitching, Over-locking, pinking shear, loop stitch, bias binding; disposal of fullness and methods: gathers, pleats, tucks, darts; fastenings: attachment of zips, hook and bar, hook and eye, buttons; taking accurate body measurement; concept of fashion: styles, colour wheel, colour combination aesthetic and practical aspects of texture, colour and style, and construction of a clothing item.

HSM 208:PRINCIPLES OF HOUSING (2 Units)

The housing needs of families. Economic, social and psychological factors involved in renting and buying a house. Housing standards; Principles design, and layout of different types. Rural housing and community development. Methods of house acquisition (rentage, inheritance, purchase etc.). Housing standards, principles, design and layout of different houses Local materials for house construction. Public participation in housing development. Planning and design criteria for rural housing. Local materials for rural housing. Public participation in housing development. A study of the housing policies of Federal and State Governments of Nigeria. Various methods of financing house investment in the public, private and cooperative sectors.

HSM 210: HOME TECHNOLOGY (2 Units)

Basic principles and practical application of mechanical and electrical engineering. Operating and maintenance of home equipment (cooker, refrigerator, air-conditioner, pressing iron, toaster, grinder etc).Analysing/diagnosing and costing the kind of maintenance/reconditioning/repair jobs of common mechanical and electrical fixtures and equipment in the home. Study and improvement of indigenous technologies in rural homes.

HSM 212:HOUSEHOLD RESOURCE MANAGEMENT (2 Units)

Definition of terms, i.e household, resources, management, standard value, goods. categorization and identification of resources; human resources, non-human resources, material resources, application of management concepts resources, economic concepts in household production, limits to household productivity, economic resources, wealth, elastic income. Management concepts and application to household tasks: value/value classification, standard, evaluation. Conception framework of management process: Decision making; components of decision making, identifying the problem, obtaining information/formulating courses of action, considering alternatives.

HSM 214: MARRIAGE AND FAMILY RELATIONS (2 Units)

Definition of concept – family, marriage and kinship, processes of mate selection, preparation for marriage, adjustment and interaction in marriage. Laws and customs affecting marriage in different cultures with special emphasis on Nigeria's marriage and family institution. An introduction to the family structure, functions and interaction. Special attention will be given to the life cycle of the family from birth through bereavement

HSM 300: INDUSTRIAL EXPERIENCE (6 Units)

Evaluation of industrial experience to be assessed by Industrial Supervisor.

HSM 301:CLOTHING CONSTRUCTION (2 Units)

Measurement and yardage estimates. Application of introductory cause work to the construction of sewn and knitted garments. Selection of garments. Body Measurement: how and where to take measurement; preparation of fabric for cutting; components of a garment; method of assembling a garment; structural additives and their uses in garment construction; necklines and neckline finishes; disposal of fullness; set-in sleeve in a garment; pressing and final pressing in garment construction; and construct garments for exhibition.

HSM 302: SIWES SEMINAR (3 Units)

Seminar presentation of industrial experience to be assessed by Lecturers in the Department.

HSM 303:RESEARCH IN HOME SCIENCE AND MANAGEMENT

HSM 304:SIWES' STUDENT REPORT (4 Units)

Report to be bound and assessed by Departmental Supervisor

HSM 305: PROGRAMME DEVELOPMENT AND PLANNING IN HOME SCIENCE (2 Units)

Philosophy and principles of Home Science in Nigeria: role of rural women in Nigeria, agriculture and economic development; factors to be considered in Home Science programmes, planning and implementation; coordination with other agencies and organisations.

HSM 306:SIWES VISITATION REPORT (3 Units)

This is to be submitted on each visit by the Departmental Supervisor and assessed by Departmental Supervisor.

HSM 307:EXTENSION TEACHING METHODS (2 Units)

Nature and elements of communication process. Principles of communication.

Application of communication process in analysing communication problems in extension. The meaning of the concepts of teaching, learning and motivation. Steps and principles of teaching and learning. Extension teaching methods. Preparation and use of teaching materials and aids.

HSM 309: FAMILY LIFE EDUCATION (2 Units)

Definition of Family life education, theories, principles and techniques for education of parents in understanding the needs of their families. Skills and knowledge needed for healthy functioning, societal issues, managing societal problems by family life educational professionals, analysis of family life education, directed experience in parent education programme. Discussion of parent counselling and home visits for development of better relationship between parents and their children. Family life education explores

HSM 311: HUMAN DEVELOPMENT AND GROWTH I (2 Units)

In depth exploration of the social, emotional, intellectual and physical development of the child from infancy to early childhood. Principles and theories of growth and development of the child (e.g. proximo-distal principle of development, Erik Erikson's physiological explanation of attachment); language acquisition of a child, essential ingredients of language acquisition, factors affecting language development, role of parents in growth and development of the young child. Policies and programmes relating to the child (e.g. reproductive maternal newborn, Child and adolescent health (RMNCAH), Child Rights Act (2003).

HSM 313: HOME FURNISHING AND MANAGEMENT (2 Units)

Relationship between life styles and housing. Identifying house requirements and limitations. Flow of goods and activities in buildings. Form and functions in housing. Kitchen planning. Functions, selections and use of furnishings. Practical interior furnishing techniques. Fibres and structure in relation to comfort, hygiene, durability and beauty. Decoration, refurbishing and restoration of furniture and soft furnishing.

HSM 317: DEVELOPMENTAL DISABILITIES (2 Units)

Definition of developmental disabilities; identification, assessment procedures and Diagnosis of children with developmental disabilities; Types of disabilities – Autism, Down syndrome; Characteristics of children with disabilities; Intervention strategies; Preventive measures; Counselling parents of children with developmental disability.

HSM 321: INTERIOR DECORATION AND DESIGN (2 Units)

Application of design principles to interior decoration and arrangement of living space. Analysis, organization and development of multi-functional spaces within living environment. Exploration of interior living environment, contemporary and

residential areas in an ecological, behaviour cultural context.

HSM 323: NIGERIAN CLOTHING AND TEXTILE INDUSTRIES (2 Units)

Overview of clothing and textile industries. Industrial sewing. Factory procedures, methods of production, specialization in product types, store administration. How to start clothing and textile industry. Writing business plan. Staff recruitment and training, staff motivation and remuneration. Reaching the customer- the marketing mix, advertising, publicity and promotion. Segmentation, targeting, positioning and branding.

HSM 325: PARENTING THE CHILD AND YOUNG ADULT (2 Units)

Emphasis on parenting from conception to young adulthood. Attachment, temperament, behaviour regulation in cultural context. Developmental tasks, parental child relationship and effect on children development, effects of parenting styles, parents role manages, parent involvement in education. Boundaries and behavioural guidelines to raise an emotionally competent child. Theories and research on parenting and young adults within cultural contexts. Parenting styles and discipline on identity formation, separation, individualism and intimacy.

HSM 327: PATTERN DRAFTING AND DESIGN I (2 Units)

Meaning of pattern drafting; Tools and Equipment used in pattern drafting; pattern drafting terms and symbols. The principles and practice of the cutting room; How to analyse a design/style; types and methods of obtaining patterns; Use and importance of basic blocks. Pattern drafting and pattern layout. Differences and Similarities between commercial and drafted patterns; Body Measurement and size chart; Use and importance of basic blocks; drafting of basic blocks: front and back bodice, front and back skirts, sleeve and pants; Dart positions and Introduction to dart manipulations. Adaptation of basic blocks into simple styles for different activities.

HSM 329: PRINCIPLES AND TECHNIQUES OF TEXTILE DESIGN (2 Units)

Theories, methods and practices in textile design and production, steps in designing and application. Various techniques in textile and guiding principles. Material procurement and management in textile. Designing methods in all textile techniques (weaving, printing, resisting and knitting). Dye types and different types of dying techniques. Pigments chemical and mixture for printing purposes. Tools identification and application.

HSM 335: CHILD ABUSE AND FAMILY VIOLENCE (2 Units)

Historical and cultural contexts, child abuse and neglect, courtship violence and elder abuse. Multidisciplinary approach to child abuse and family violence. Including maltreatment, mistreatment, neglect, sexual abuse, impact of relationship violence

on individual development.

HSM 401: FAMILY IN CROSS-CULTURAL PERSPECTIVE (2 Units)

An examination of patterns of family interaction on the international and intra-national levels. Special emphasis will be given to the processes of child rearing and socialization, particularly, as they relate to the larger culture. Attempts to quantify and qualify current patterns of child rearing within Nigeria will be emphasized through field work organisation and development of multi-functional space within living environment. Exploration of interior living environment, contemporary and traditional residential areas in an ecological behaviour and culture context.

HSM 402: ADVANCED WEAVING (2 Units)

HSM 404: NIGERIAN COTTAGE INDUSTRY (2 Units)

Concept and principles of cottage industry. Case studies of various types of cottage industries in Nigeria. Their operations, problems and prospects. Government policies and laws on cottage industries. Report of case studies/reviews done individually or group. Growth prospects at college industries cottage of industries to women problems of cottage industries, role of traditional financial intermediaries, facilitation of market linkage and access to capital potentials of SME's, constrain of SME's operation, project evaluation, reporting feasibility study of a project managerial feasibility.

HSM 405: WEAVING TECHNIQUES (2 Units)

Explain Basic textile terms such fibre,yarn, filament, warp, weft, fabric and so on. Defination of Weaving, What is Loom, Types of looms, Identification of parts of a loom, Important Parts of Loom, Motions of loom , Sequence of operations in weaving, Some basic weaves/ weaving techniques e.g. Plain weave, basket weave ,twill, satin weave and so on, Mounting of Loom, Preparation of Loom for weaving, Operating loom, Weavers knot, Fabric defects, Precautionary Measures. Execution of original designs through performing the wrapping, drawing – in , denting and weaving on the loom.

HSM 406: CONSUMER EDUCATION (2 Units)

Definition and principles of consumer education. An analysis of economic forces affecting individuals and facilities 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 implications of consumer decisions and actions.

HSM 407: TEXTILE PRODUCTION I (3 Units)

History of Textile, Textile Design materials and techniques; Traditional, contemporary

and exotic methods of textile design; Theories, methods and practices of textile in two dimensions; Paper design for fabric reproduction for all textile production techniques. Paper design work for all resists method of fabric production with special emphasis on African traditional motifs. Colour separation of paper work for exposure (Negative and positive).

HSM 408: TEXTILE PRODUCTION II (3 Units)

Transfer of colour separated paper works on mesh using different methods (hand application, photo chemicals, etc. Conversion of two dimensional paper works to a functional textile product of all the techniques: printing (stencilling, screen, stamp, etc). Resist (starch, batik, tie-dye, fold & dye, stitch & dye, etc.). Knitting, felting, etc with special emphasis on traditional African motifs. Advances in textiles.

HSM 409: ADVANCED RESOURCE MANAGEMENT (2 Units)

Application of management principles in using resources – work capacity, work methods, work space, time and financial management (composite income concept). Identify and analysing problems of resource management at the individual family, institutional, community and national levels. Concepts of uncertainty and risk. Theories on decision making process. Social, political and economic policies affecting resource management

HSM 410: CREATIVE FABRICS (2 Units)

Conception of textile design as art. Theoretical application of principles and elements of design in the construction of tapestries, rugs, applique, stitchery, lace-work, macramé, Yarn on Board, Beads on board, etc Design creation of different accessories such as bags using beads, buttons, fabrics, etc. production of outing accessories such as earrings, bangles, bags, hats, belts, shoes etc. for different outfits. Design and production of costume jewellery from available local materials such as beads, plastics, leathers, shells etc.

HSM 411: ADVANCED CONSTRUCTION AND TAILORING TECHNIQUES (3 Units)

The body contour, art of fitting. Fitting techniques, importance of grain line in fitting. Suitable styles for various figures. Figure problems. Methods of alteration on sewn garments. Techniques of repair and renovation of sewn garments- mending/darning, patching, reconstruction. Practical exercise in sewing of fitted garments for various figures and age. Practical exercise in repair, renovation of sewn garments and patchwork. Tailoring techniques on special fabrics such as stripes, velvet, chiffon etc. Methods of lining a garment. Modelling- principles and benefits.

HSM 412: APPLIED CLOTHING DESIGN (3 Units)

Practical application of the knowledge gained in construction class through individual

creativity and the production of original designs and presentation of finished articles for various events. Construction of suitable styles for various members of the family, groups or societies suitable for various activities and occasion. Production of household articles, souvenirs, uniforms, etc. The work will be evaluated by students and Departmental staff.

HSM 413: FAMILY DYNAMICS AND CHANGE (3 Units)

An ecosystem perspectives of family. Intra-household dynamics processes of interaction, decision-making, division of analysis, production and consumption. Changes in family structure and factors influencing such changes. Conflicts and integration within the family and inter-relations of these to the larger society.

HSM 414: DESIGN CONSULTANCY (2 Units)

Types of clients and their needs. The designer consultant relationship. Case studies in solving design problems in the areas of textiles, clothing, housing and furnishings, recipe development, marriage intervention, day-care centre and food services establishment, according to the students' option and presentation of design solutions. X-ray of design consultancy, designing and project design and general qualities of a designer would be examined. The course will also address human resource management, product design and process selection. Growing small and medium enterprises, developing and components of business plan, entrepreneurship, competition and business, effective budgeting and financial planning for an agricultural business would be fully explained.

HSM 415: HOME MANAGEMENT PRACTICUM (2 Units)

As part of the application of management principles and processors, a period of 4-6 weeks in a management house is required. During this period, students shall analyse and evaluate management techniques at different family lifecycle stages and socio-economic levels. A reports of the home practicum experience would subsequently be submitted. Types of clients and their needs. The designer consultant relationship. Case studies in solving design problems in the areas of textiles, clothing, housing and furnishings, recipe development, marriage intervention, day-care centre and food services establishment, according to the students' option. Presentation of design solutions.

HSM 416: ADOLESCENCE AND ADULTHOOD (3 Units)

This course examines some of the theories and models relating to development and growth from adolescence through adulthood; Social determinants of adolescent development and growth; Risk and exploratory behaviours among adolescents; transition into adulthood; special adolescents e.g. adolescents with disabilities; introduction to Sexual Reproductive Health and Rights (SRHR); Adolescent Morbidity

and Mortality; Policy and Programmes for adolescents and young persons.

HSM 417: ORGANISATION AND MANAGEMENT OF CHILD DEVELOPMENT CENTRES (2 Units)

Concept of Early Child Care Education (ECCE); trends in educational issues as they affect children from ages 0-5 years in Nigeria; National Policy on Education regarding ECCE; Educational goals that relate the philosophy of Nigerian Education to ECCE; Problems of pre-primary education in Nigeria; Starting a school in Nigeria; appraisal of universal tool kit on how to set up a child care centre e.g. UNESCO and UNICEF toolkit. Developmental needs of the young child and the implications of such needs for the development of age appropriate materials and for the design of community and school based programmes.

HSM 418: PATTERN DRAFTING AND DESIGN II (2 Units)

Adaptation of basic blocks for advanced styles suitable for various occasions. Drafting of various sleeve patterns- puffed, bell, Magyar, kimono, cap, Raglan and so on. Drafting of various skirt patterns- four and six gore skirt, circular and semi-circular skirts, panel skirts, skirt with pleats, skirts with pockets, maternity skirt and so on. Drafting of collars such as Peter Pan collar, Shirt collar, collar with revers, and standing collars. Pattern Alterations and Pattern Grading.

HSM 420: HUMAN DEVELOPMENT AND GROWTH AND II (2 Units)

Principles guiding growth and development, with special emphasis on toddlers and school age children; the social, emotional, intellectual, physical and language development of the child. Implication of social, emotional, physical and language development on the personality and behavioural development of the young child, sex-role identity, aggression and pro-social behaviour, cultural variation in family socialization; effect of community and environment on growth and development.

HSM 422: DESIGN OF UTILITY AREAS IN THE HOUSE (2 Units)

Determining space, equipment and furniture requirement in kitchens, stores, and other rooms in the house. Planning for work, storage, water drainage, voltage, ventilation, light, refuse disposal, traffic and materials flows.

HSM 423: FAMILY AND COMMUNITY COUNSELLING (2 Units)

Counselling as profession; types of counselling; stages of counselling; counselling techniques; areas/domains of counselling; counselling skills; uses of government and other resource persons in counselling e.g. psychologists, social worker; role and limitations of counsellors; case work management; crisis intervention.

HSM 429: FAMILY AND COMMUNITY HEALTH (2 Units)

Concept of health; introduction to community mental health; communicable and non-

communicable diseases; common health problems in Nigerian communities. Levels of prevention and vaccine preventable diseases; family adjustments to health crisis; Governmental and voluntary agencies' efforts in solving health problems.

HSM 431: CHILDREN'S LITERATURE (2 Units)

The course is an introduction to literature written for children and young readers. It exposes students to explore examples of children's literature and analyse texts using literary aid. Socio-political criteria/perspectives of genres with an emphasis on diversity. Read, classic children's books and contemporary materials, specifically. Will read and reflect on texts from variety of genres and traditions, Learn how to use literary criteria to select and evaluate children's literature; Think critically about representation of race, ethnicity, class, gender/sexuality in texts for children; Identify authors and illustrators of classic and contemporary children texts; Exhibit a familiarity with a range of children's literature awards; Utilize professional resources related to the study of children's literature; Appreciate children's literature through exposure to variety of authors, illustrators and genres; Expose students to various writing styles and techniques.

HSM 432: NURSERY SCHOOL LABORATORY (3 Units)

Principles and theories of learning as it relates to the growth and development of Nursery School Children. Overview of Nursery School Education in Nigeria. Philosophy, objectives and scope of Nursery School Laboratory. Equipment for Nursery School Laboratory. Understanding children's behaviour. Adjustment to new experiences. Interpersonal communication skills needed in group relationship. Exploration of the intellectual of Nursery School Children. Planning of Curriculum.

HSM 434: Entrepreneurship Education in Home Science and Management (2 Units)

HSM 435: ORGANISATION OF FAMILY AND CHILD WELFARE PROGRAMMES (2 Units)

Concept of family and child welfare organization programmes; concept of orphan, orphanage management, child adoption and fostering as well as guidelines for establishing orphanage homes; child abuse, risk factors for child abuse, and common features of successful child abuse prevention programmes. Concept, nature and scope of social welfare administration, examining various existing social welfare policies and laws e.g. National Social Welfare Development Policy (1989); Children and Young Persons Law (CYPL) the Nigerian Child's right act. History of Social Welfare in Nigeria; Social Welfare Programmes in Nigeria; Social Welfare agencies in Nigeria; Role of International agencies in Child Welfare; juvenile justice in Nigeria; Introduction to

Social Work practice; inter-professional collaboration in social welfare; field visits to social welfare organizations.

HSM 439: INSTITUTIONAL EQUIPMENT AND MANAGEMENT (2 Units)

Definition, designs and classification of institutional equipment; requirement and specification for installation and operating large equipment; methods of evaluation; equipment performance; use and routine care of equipment and special maintenance practices of equipment and environment. Identify and describe various sewing tools and equipment (domestic and industrial sewing machines) and describe their functions. State the factors which affect choice and appropriate use of the different types of equipment. Describe how to care for, maintain and store tools and equipment for sewing. Classify tools and equipment- sewing, pressing, cutting, fitting and drafting tools. Safety measures in the laboratory.

HSM 441: ADMINISTRATION AND PROGRAMME PLANNING IN EXTENSION (2 Units)

Concepts, theories, principles and guidelines of administration, organization and supervision as applied to extension. Administrative function and responsibility in agricultural extension, staff recruitment, selection, placement and supervision, budget development and fiscal control; importance of programme planning in extension, principles and concepts of programme planning in agricultural extension need, educative objective; learning experience, clientele participation, plan of work and calendar of work, the role of good public relations, good leadership and cooperation for an extension worker, associations and cooperatives. Concepts of evaluation applied to agricultural extension programmes.

HSM 443: FASHION DRAWING AND DESIGN (2 Units)

Study fashion styles from designers and design traditional and contemporary outfit. Create designs for specific occasion e.g. wedding, casual, sport etc. Draw from life models with emphasis on garments worn by fashion models. Produce sketches of still and fashion life models with worn garments for display. Sketch various face shapes (oral, square, Diamond, Round) Draw necklines of garments suitable for various facial shapes and occasions.

HSM 497: SEMINAR I (1 Unit)

Presentation of final year projects proposal by students.

HSM 498: SEMINAR II (1 Unit)

Presentation of final year projects by students.

HSM 499: PROJECT (4 Units)

Each student will submit report of his/her project based on original research work

carried out under staff supervision. Where applicable, original design of pro-type pattern drafting, clothing construction, recipe development, extension models, etc., will be presented in addition.

DEPARTMENT OF HOSPITALITY AND TOURISM MANAGEMENT

The Department of Hospitality and Tourism was initially established by the Senate of the Federal University of Agriculture, Abeokuta in 2009 as Department of Foodservice and Tourism. The Department is one of the four departments in the College of Food Science and Human Ecology (COLFHEC). The first intake of students to the Department of Foodservice and Tourism resumed in October, 2010. The Foodservice and Tourism program was given full accreditation by the National University Commission (NUC) in July 2013 with the proviso to change the name of the program to **Hospitality and Tourism** and the 4 years Foodservice and Tourism program to 5 years Hospitality and Tourism program based on National University Commission Bench Marks (NUC BMAS). The programme is meant to complement the collective goals of other established programmes namely; Food Science and Technology, Home Science and Management, Nutrition and Dietetics. The Hospitality and Tourism (HTM) program commenced with intakes of student in the 2013/2014 academic session and the transferred 200 and 300 level Students of Food Service and Tourism into the new program.

Hospitality and Tourism (HTM) is a multidisciplinary field of study with the purpose of preparing people with the expertise, commitment, and skills for training, supervising, management, marketing and operations positions in the expanding industry that provides food, accommodations, and tourism services to people away from home. As a field of study, Hospitality and Tourism program is interdisciplinary. It draws upon a wide range of basic disciplines to provide the fundamental knowledge and skills that are required to fulfil the diverse demands placed upon individuals in leadership positions within the hospitality industry.

The Hospitality and Tourism industry is one of the largest and fastest growing industries in the world and this growth is predicted to continue. It is a service industry and it includes areas such as: hotels, restaurants, night clubs, convention centres, amusement parks, cruise ships, events, travel and tours. With the rapid growth in the field of Hospitality and Tourism, demand for more and more expertise in this sector is growing.

As an academic discipline, hospitality covers 'the management of food, beverage, accommodation, event planning, leisure, gaming etc. Currently the industry is facing challenges in meeting the diverse needs of clientele. Professionals in the industries should be competent to address these challenges and handle the various discipline involved in hospitality. This can be achieved through appropriate training.

The tourism business is also growing steadily in the country, in the areas of

historical/traditional/modern tourism involving arts, leisure and entertainment. The Hospitality and Tourism programme puts the training needs of both industries as an integrated package. This programme will provide an appropriate training medium for human resource development and wide-scope exposure of graduates in the frontiers of knowledge needed to solve the problems of this sector.

Rationale

There is dearth of professionals especially University trained and highly skilled manpower in the Hospitality and Tourism industry. The programme addresses the training and education needs of graduates required to operate in these industries. Furthermore, the curriculum of Hospitality and Tourism program in FUNAAB is designed to be a **science-based curricular model** that emphasizes the importance of science and technology in the Hospitality and Tourism industry.

Area of Focus

The Hospitality and Tourism program has the following focus on broad based inter-disciplinary specializations:

i. Hospitality and Hotel Management
ii. Food Production and Product Development
iii. Food Safety
iv. Food Quality Control and Assurance
v. Culinary Science and Technology
vi. Travel and Tourism Management
vii. Housekeeping and Accommodation Management.

Philosophy

The philosophy of the Department of Hospitality and Tourism is to produce graduates in the Hospitality and Tourism industry that will be globally relevant and excel in a dynamic business world. The graduates will be active in their community and have knowledge of entrepreneurial principles and be competent in technology, communication, presentation, teamwork and critical thought across disciplines without compromising sustenance of an environmentally friendly society.

Objectives

1) To attract prospective students who possess a strong desire to learn and pursue a career in Hospitality and Tourism.
2) To equip students with the necessary training, leadership, managerial, and technical skills needed in the Hospitality and Tourism industries.
3) To train graduates that will develop the required leadership and entrepreneurial skills to set up, manage, and operate profit oriented businesses based on strategies for cost-effectiveness and management of

human and material resources.

4) To offer training that serves as a foundation for research and further education in the discipline.
5) To produce articulate graduates who has clear understanding of the science of the Hospitality and tourism, possess strong interpersonal skills, good business sense and entrepreneurial spirit
6) To train graduates with sound knowledge of developing home-based services and those suitable for the export market in order to attract foreign exchange earnings and investors for economic stability of the country.
7) To train graduates to be self-employed or employers of labour, as well as being engaged in the service needs of both private and public organizations.
8) To promote scholarship and high quality research aimed at solving the problems confronting the hospitality and tourism industry.
9) To equip graduates with high standard of academic and professional competence in the pursuance of higher degree programmes.

Vision

To become an internationally recognized Department for research and production of scientifically and vocationally competent human capital for the Tourism, Hospitality and Educational Industries.

Mission

1) To assist in the actualisation of the University tripodal mandate of teaching, research and extension in Hospitality and Tourism.
2) To develop relevant specialisation areas in Hospitality and Tourism.
3) To produce high level manpower with capacity for self-employment in various specialised areas of Hospitality and Tourism.
4) To disseminate and utilise research results through invigoration of extension services for improved food utilisation, service delivery in hospitality and tourism and for promotion of food security.
5) To continuously enhance and effectively utilise resources and facilities.
6) To recognise and adapt to changes in the Nigeria environment.

Academic Staff

Name	Qualification	Specialisation	Designation
H. A. Bakare	B.Sc. (Abeokuta), M.Sc., Ph.D. (Ibadan)	Food processing and Product Development	Reader/Ag. HOD
Adebukunola M. Omemu	B.Sc.(Ogun), M. Sc., Ph.D. (Abeokuta)	Food Microbiology/ Food Safety	Professor
Mojisola O. Adegunwa	ND, B.Sc., M.Sc. MBA, PGDE, Ph.D (Abeokuta)	Food Quality Control and Assurance	Senior Lecturer
Abioye Adedipe	HND, B.Sc., MRT(Ogun)	Hospitality Management	Lecturer II
I. A. Kukoyi	ND, B.Sc., M.Sc., MRT.	Tourism Management	Lecturer II
E. A. Adeyefa	HND, B.Sc., M.Sc.	Hospitality and Tourism	Lecturer II
Oyinkansola C. Oduntan	B.Sc., M.Sc.	Tourism Management	Lecturer II
Olufunmilayo A. Oladosu	ND, B.Sc., M.Sc.	Hospitality and Tourism	Assistant Lecturer
L. .A. Adebanjo	B.Sc., M.Sc.	Hospitality and Tourism Management	Assistant Lecturer
J. Adesuyi	B.Sc., M.Sc.	Hospitality and Tourism Management	Assistant Lecturer

100 Level: First Semester

Course Code	Course Title	U	L	T	P
BIO 101	General Biology	2	2	-	-
BIO 103	Introductory Physiology	2	2	-	-
BIO 191	Practical Biology	1	-	-	1
CHM 101	Introductory Physical Chemistry	3	3	-	-
CHM 191	Practical Chemistry	1	-	-	1
MTS 105	Mathematics for Non-Major	3	2	1	-
PHS 105	General Physics for Non-Major	3	3	-	-
PHS 191	Physics Laboratory I	1	-	-	1
NTD 103	Introduction to Human Nutrition and Dietetics	3	3	-	-
GNS 101	Use of English	2	2	-	-
GNS102	Introduction to Nigerian History and social structure	1	1	-	-
GNS 111	Introduction to Social Problems	1	1	-	-
	Total	**23**	**19**	**1**	**3**

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
BIO 102	General Biology	2	2	-	-
BIO 192	Practical Biology	1	-	-	1
CHM 102	Introductory Organic Chemistry	2	2	-	-
CHM 192	Practical Chemistry	1	-	-	1
PHS 106	General Physics for Non-Major	3	2	1	-
PHS 192	Physics Laboratory II	1	-	-	1
AEM 102	Principles of Economics	2	2	-	-
MTS 106	Mathematics for Non-Major	3	2	1	-
HTM 102	Principle of Sociology	2	2	-	-
CHM 104	Introductory Inorganic Chemistry	2	2	-	-
	Total	**19**	14	2	3

200 Level: First Semester

Course Code	Course Title	U	L	T	P
CSC 201	Computer Programming	3	3	-	-
STS 201	Statistics for Agricultural & Biological Sciences	3	2	1	-
FST 201	Introduction to Food Technology	2	2	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 202	Elements of Politics and Government	1	1	-	-
GNS 203	Use of Library	1	1	-	-
GNS 204	Logic and History of Science	2	2	-	-
PCP 201	Principles of Crop Production	3	2	-	1
HTM 201	Introduction to Hospitality and Tourism	3	2	-	1
ABE 223	Technical Drawing 1	2	-	-	2
GNS 108	Communication in French	1	1	-	-
	Total	**21**	**18**	**1**	**2**

200 Level: Second Semester

Course code	Course Title	U	L	T	P
NTD 202	Food Consumption Studies	3	2	1	-
HRT 202	Introduction to Landscaping	2	2	-	-
HTM 202	Introduction to Microbiology	2	1	-	1
HTM 204	Spices, Herbs and Condiments	2	1	-	1
ETS 206	Entrepreneurship Studies and Change Management	2	2	-	-
APH 202	Introduction to Animal Agriculture	3	2	-	1
HTM 206	Culinary French I	1	1	-	-
HTM 208	Food and Beverage Production / Service I	3	2	-	1
HTM 210	Food Purchasing and Costing	2	2	-	-
	Total	**20**	**15**	**1**	**4**

300 Level: First Semester

Course Code	Course Title	U	L	T	P
HTM 301	Food and Society	2	2	-	-
HTM 303	Hospitality Facility Planning and Design	2	2	-	-
HTM 305	Tourism Transportation	2	2	-	-
HTM 307	Front Office / Reception Management	2	2	-	-
HTM 309	Hospitality and Tourism Accountng	2	2	-	-
HTM 311	Food Analysis and Sensory Evaluaton	3	2	-	1
HTM 313	Event Management	2	2	-	-
HTM 315	Liquor Studies	2	1	-	1
HSM 321	Interior Decoration and Design	2	2	-	-
HTM 317	Managing Housekeeping Operation	2	2	-	-
	Total	**21**	19	-	2

300 Level: Second Semester

Course Code	Course Title	U	L	T	P
HTM 302	Hospitality and Tourism Law	2	2	-	-
FST 304	Food Microbiology -	3	2	-	1
HTM 304	Food Preparation Management	2	1	-	1
HTM 306	Food Processing and Preservation	3	2	-	1
HTM 308	Personnel Management in Hospitalty	2	2	-	-
HTM 310	Culinary French II	1	1	-	-
HTM 312	Food and Beverage Production and Service II	3	2	-	1
HTM 314	Travel Operations	2	2	-	-
PHS 364	Energy and Environment	1	1	-	-
	Total	**19**	**15**	**-**	**4**

400 Level: First Semester

Course code	Course Title	U	L	T	P
HTM 401	Entrepreneurship Skills in Hospitality & Tourism Business	2	2		-
HTM 403	Research Methods in Hospitality and Tourism	2	2	-	-
HTM 405	Zoological Gardens and Recreation Parks	2	2	-	-
HTM 407	Advanced Food Production	3	2	-	1
HTM 409	Hospitality and Tourism Technology	2	1	-	1
HTM 411	Accommodation Management	3	2	-	1
HTM 413	Principles of Hospitality and Tourism Development	2	2	-	-
HTM 415	Seminar in Hospitality and Tourism	1	1	-	-
NTD 401	Recipe Development and Sensory Evaluation	2	1	-	1-
	ELECTIVE ONE	3	2	-	1
	Total	**22**	**17**	**-**	**5**
ELECTIVES					
HTM 417	Restaurant Operational Management	3	2	-	1
HTM 419	Intermediate Tourism	3	3	-	-

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
HTM 400	Industrial Activity	6	-	-	6
HTM 402	SIWES Seminar	2	-	-	2
HTM 404	SIWES Report	5	-	-	5
HTM 406	SIWES Visitation	3	-	-	3
	TOTAL	**16**	**-**	-	**16**

500 Level: First Semester

Course Code	Course Title	U	L	T	P
HTM 501	Culture and Heritage Tourism	2	2	-	-
HTM 503	Food and Beverage Management	2	2	-	-
HTM 505	Hospitality and Tourism Practicum	2	-	-	2
HTM 507	Hospitality & Tourism Marketing	2	2	-	-
HTM 509	Consumer Behanior	2	2	-	-
HTM 511	Food Safety, Hygiene and Sanitation	2	1	-	1
HTM 513	Maintenance Facility in Hospitality Ops.	2	2	-	-
HTM 597	Seminar I (Pre data)	1	1	-	-
HTM 515	Industrial Relations	2	2	-	-
	ELECTIVES (ONE)	3	2	-	1
	TOTAL	**20**	**16**	**-**	**4**
ELECTIVES					
FST 509	Food Packaging Methods	3	3	-	1
FST 503	Meat and Fish Science and Technology	3	2	-	1

500 Level: Second Semester

Course Code	Course Title	U	L	T	P
HTM 502	Security and Loss Prevention in Hospitality	2	1	-	1
HTM 504	Sociology of Tourism	2	2	-	-
HTM 506	Strategic Planning and Decision Making	2	2	-	-
HTM 508	Hospitality and Tourism Ethics	2	2	-	-
HTM 510	Bar Operations	2	2	-	-
HTM 598	Seminar II (POST DATA)	1	1	-	-
HTM 599	Project	4	-	-	4
	ELECTIVE (ONE)	3	3	-	-
	TOTAL	**18**	**13**	**-**	**5**
ELECTIVES					
FST 510	Nigerian's Food and Industrial Raw Materials	3	3	-	-
HRT 506	Park and Garden Design Management	3	2	-	1

COURSE SYNOPSES

HTM 102: PRINCIPLE OF SOCIOLOGY (2 Units)

Comparative studies of cultures including language, dress, food habits, environment, customs and traditions, etc. Visitor management, education and preservation of cultural diversity. How cultural factors influence Tourism.

HTM 201: INTRODUCTION TO HOSPITALITY AND TOURISM (3 Units)

This introductory course acquaints the student with the scope and complexity of the hospitality industry by exploring the national and global relationships of lodging, food, and beverage operations. The course examines career opportunities, organizational structures, history of Hospitality Industry.

Concept and historical development of Tourism. Structure and organization of tourism; Growth of tourism, demand for tourism, tourism in Nigeria. Travelling, procedure for booking and ticketing, scheduled individual and group travel, travel agency, tour operator and tour guide. Career opportunities in Tourism.

*Field trips to a variety of hotel, tourists' destinations/sites, restaurant and event centres to acquaint students with the scope of Hospitality and Tourism Industry.

HTM 202: INTRODUCTION TO MICROBIOLOGY (2 Units)

The course introduces the students to the world of microorganisms: different groups of microorganisms, characteristics, growth, reproduction and control. Role of microorganisms in food production and food spoilage. Importance of Microbiology

concept to human health.

HTM 204: SPICES, HERBS AND CONDIMENTS (2 Units)

Identification and classification of spices and condiments. Indigenous and non-indigenous spices and condiments. Role of spices in food industry. Legislative standards, nutrition composition, health benefits of spices, herbs and condiments. Collection, production, packaging and storage.

HTM 206: CULINARY FRENCH I (1 Unit)

Special language needed in the hotel and tourism industry so as to communicate in French in different industry- related situations, cultural differences of the French-speaking countries, and French industry-related texts.

HTM 208: FOOD / BEVERAGE PRODUCTION AND SERVICE I (3 Units)

Planning and equipment layout in a standard kitchen. Identification of Kitchen equipment and tools, Purchase, use and maintenance of kitchen equipment. Menu planning and types of covers. Definition, types/classification, uses and methods of preparation of the following: Salad and Dressing, stocks, Soups, Sauces, Sandwiches, Accompaniments and Garnishes. Definition and types of Breakfast Production of appetizers, main course items and desserts. Definition and Classification of Beverages Principles and techniques of food service, service methods and organization. Modern, traditional and commercial, industrial and welfare service systems, vending and disposables, dispending, control of material flow and handling, recipe construction, balance, item substitution, establishing and measuring standards, applied quantity and cost control production methods and organization.

HTM210: FOOD PURCHASING AND COSTING (2 Units)

Sources of supply and purchasing information raw materials, prepared and point prepared product purchasing methods and organization, tendering, contract buying, nominated suppliers, cooperative buying groups food quality, standards measurements, labelling requirements and specifications. Inventory control. Legal standards for licences. Cost as a management function in hospitality industry; Factors affecting food cost control. Operational control, store keeping.

HTM301: FOOD AND SOCIETY (2 Units)

Role of food in defining regional and personal identity. Local and international cuisines. Food habits, their formation and change, ethnic and cultural influences, ethnic cookery, religious influences European, Mediterranean, Middle, Eastern, American, Mexican and South American, Caribbean, Indian, Pakistani, Bangladesh, Chinese, Japanese, South East Asian and African Cookery.

HTM303: HOSPITALITY FACILITY PLANNING AND DESIGN (2 Units)

Design and maintenance of buildings, furniture, fittings and equipment in hospitality

industry. Factors affecting selection and location of food service, laundry, water and surface parking systems. Inputs needed for operational efficiency, cost control through extending equipment and building life and reducing utility expenses. Innovative and environmentally friendly options for solid waste reduction and disposal. Using modern technology to streamline operational procedures. Renovation.

HTM305: TOURISM TRANSPORTATION (2 Units)

Tourism transportation within the overall framework of the passenger transportation industry. Examination of the physical, economic, pricing and regulatory components followed by selected industry analysis of major modes in tourism transportation using the systems approach. Local and national legislation, international treaties and organizations, current policy issues and future trends with reference to Nigerian tourism industry.

HTM307: FRONT OFFICE/ RECEPTION MANAGEMENT (3 Units)

Reception terms – Reception and receptionist. Functions and staff of reception. Personal qualities and qualification of receptionist, duties. Reservations – advance, reservation diary, description and use. Guidance notes on advance reservation. Communication and counselling, social skills, selling and marketing techniques, legal aspects. Ancillary services checking in, checking out, night clerk.

HTM309: HOSPITALITY AND TOURISM ACCOUNTING (2 Units)

Accounting concepts, Nature and purpose of book keeping, gross departmental net profit, Sales Book-Keeping, Trial Balance, Cost-profit-volume relationship Budgetary Control, Pricing-time period, pricing formula, pricing of accommodation, food and beverage accounting records, accounting transactions, final accounts, capitals, development of management accounting concepts, mechanization, legal aspects. Trial accounts.

HTM311: FOOD ANALYSIS AND SENSORY EVALUATION (3Units)

Proximate analysis of food; analysis of moisture, crude protein, crude fibre, ash and total carbohydrate. Determination of important food constituents including food colours, trace elements and contaminants. Developing sensory test programme. Sensory evaluation of food. The human senses of olfaction and gestation, taste and smell receptors; mechanism of taste and smell perception; organoleptic assessment of processed foods to determine accessibility operating conditions for sensory testing, assessment methods and scores. Statistical interpretation of data. Sensory evaluation from the perspectives of marketing; research and product development.

HTM313: EVENT MANAGEMENT (2 Units)

Nature and types of events, event as products, event planning, organization and staffing of events, managing event process, strategies and tactics. Event marketing

and evaluation. Conference Planning, Festival planning. Sponsorship, budgeting, time management, feasibility of an event. Venue management. Legal compliance in the event industry. Event Risk Management- Site safety, Crowd control, First Aid and medical cover

HTM315: LIQUOR STUDIES (2 Units)

Alcoholic and non-alcoholic beverage - Hot and cold beverage, beer, wines, spirits, liqueurs and mixed drinks. Storage and control. Basic home brewing techniques. Introduction to wines – definition, types, terms, wine making, French Wines – Bardux, Burgurdy, Champagnes, German Wines, Italian Wines, Wines of other countries – Spain, Portugal, Hungary, etc, fortified wines, vermouths and aperitifs-definitions and types, Brandys, Whisky-Scotch and other, gin, blended. Cocktails. Types of glasses, service of liquor.

HTM317: MANAGING HOUSEKEEPING OPERATION (2 Units)

Housekeeping organization. Housekeeping staff. Relationship with other departments. Head housekeeping his duties, recruitment of staff. Duty rosters for commercial hotel housekeeping, seasonal hotels, motel, etc. Duties and responsibilities of other housekeeping staff – Assistant housekeeper, chamber maids, staff maids, cleaners, clock room attendant, house-porters, valets. Sitting and large rooms, linen, beds and beddings, keys, safety and fire precautions, health, Hygiene and first aid. Storage containers, towels – different sizes/types kitchen rubbers, oven cloths, dusters, death of a guest, control of rodents and pest, bed bugs, clothes moth and their control.

HTM302: HOSPITALITY & TOURISM LAW (2 Units)

Basic concepts of law, company law (partnership, sole, limited liability). Law of contract, common law as applicable to hospitality industry. Relevant regional and international laws. Health, safety and welfare, conditions and at work. Hotel Proprietor's act of 1956, Food and drug decree of 1973, hygiene regulations, liquor licensing laws, staff employment regulations wages and industrial councils decree of 1973. Torts and occupies liability, risk management and security. Functions of Nigerian Tourism Development Board, Government regulations on tourism, premises liability, employment, anti-discrimination laws and treatment of guests and employees with disabilities. Legal strategies, regulations and international agreements. Visitor management, taxation, budgeting and management reports.

HTM304: FOOD PREPARATION MANAGEMENT (2 Units)

Preparation, Presentation and Service of various Nigerian dishes.

HTM306: FOOD PROCESSING AND PRESERVATION (3 Units)

Principles of food processing and preservation. Raw materials and their significance in food preservation; food deterioration; fundamentals of heat and cold in preservation;

chemical and biological principles of food preservation; different preservation methods, processing of cereals, legumes and seed soils; meat, fish and poultry; technology of dairy products processing; food additives; food beverage manufacturing; food by-products utilization; the choice of appropriate food preservation and processing equipment. Deterioration and spoilage of foods, other post-harvest changes in food. Contamination of foods from natural sources. Composition and structures of Nigerian/West African food; factors contributing to texture, colour, aroma and flavour of food. Cost; traditional and ethnic influence of food preparation and consumption pattern.

HTM308: PERSONNEL MANAGEMENT IN HOSPITALITY (2 Units)

Nature and challenge of personnel management, Overview of management theories, Managerial functions as applicable to Hospitality Industry. Performance appraisal, motivation, organizational behaviour. Trade union issues. Labour turnover, layoffs, outplacement, personnel research and change.

HTM310: CULINARY FRENCH II (1 Unit)

French culinary terminologies in Hospitality. More Gastronomic terminology, names of dishes, cooking methods, menu phrases, Foodservice terminology, presenting the restaurant, its staff and its operations, meals, special diets, drinks, customer service situations.

HTM312: FOOD / BEVERAGE PRODUCTION AND SERVICE II (3 Units)

Evaluation of food and beverage systems. Food cost control, Production methods, production systems, service systems. Management of different menus table note, a la carte, etc. Developing marketing strategy, merchandizing concept, menu concept and planning operations for profitable operations. Pertinent legislation. Simulated commercial operations will be used to develop skills and evaluate operating systems within a realistic Scenario. Banquet and Banqueting. Organization of the restaurant brigade, factors governing size of restaurant brigade, personal qualities required of restaurant staff, ancillary departments, services of various menus – a la carte and table d'hote services, service routine, breakfast, floor and room services. Table laying for Table d'hote and a la carte menu, staff luncheon, afternoon routine, buffets, floral decorations, Types of service – silver service, plates service, cafeteria or self-service, light refreshment service, full service. Restaurant control system, banquets and other arrangements, buffet dinners, wedding and outdoor catering.

HTM314: TRAVEL OPERATIONS 1 (2 Units)

Accessing information essential for competent operations in a travel agency. Operation of computer reservation systems and technological development in retail travel industry. Travel terminology, costings, documentations, ancillary services,

tourism destination studies. Special office systems.

HTM 401: ENTREPRENEURSHIP SKILLS IN HOSPITALITY AND TOURISM BUSINESS (2 Units)

Definitions of entrepreneurship. Rudiments for starting a business, developing a business plan, International entrepreneurship, accessing funds, advisory services. The essence of business and entrepreneurial for socio-economic development. Creativity factors in micro enterprise initiatives steps and legal framework for establishing an enterprise. Financial record keeping and accounting statements. Demand and supply for the hotel industry. Problem of indigenous enterprises in a developing country. At the end of the course the student will be expected to deliver a seminar on starting up his own business, and an approved work-plan. Business English

HTM403: RESEARCH METHODS IN HOSPITALITY AND TOURISM (2 Units)

Concept and goal of research in Hospitality, types of researches. Classification of research methods, research designs, sampling and sampling techniques, The Research process, research planning and execution, results and data analysis, research report and technical writings. Application of statistic and computer in research

HTM405: ZOOLOGICAL GARDENS AND RECREATIONAL PARKS (2 Units)

Management systems and methods for development of full service zoological gardens, recreational parks and resorts. Comparison of specialized requirements for different types of resorts based on location, climate, activities, and lifestyle.

HTM407: **ADVANCED FOOD PRODUCTION (3 Units)**

Food product development process, Application of HACCP and GMP in food production. Menu making, pricing, cost control. Production methods, production systems. Application of mass production process of sauces, soup, meat, poultry/ Game, fruits, fish, vegetable, and egg cookery. Planning, developing, implementing and supervising the production process profitability calculations and menu sales mix analysis

HTM409: HOSPITALITY & TOURISM TECHNOLOGY (2 Units)

Kitchen planning, catering services – gas, electricity, comparison of fuels, energy conservation standards of hygiene, cook-chill system, cook–freeze system, sous-vide, centralized production. Applications and uses of Emerging technologies and equipment in Hospitality. Application of computer in Hospitality industry.

HTM411: ACCOMMODATION MANAGEMENT (1 Unit)

Types of accommodation. Laundry management, Furniture and fittings, room amenities and supplies. Room status, room division, accommodation selling

techniques. Reservation tracking, control guest circle, room forecasting, revenue and yield management. Security, safety, first aid. Cost and control of material, labour, over heads, total and Unit cost of cleaning, prices, types of tariffs, calculation, charges based on breakdown/cost basis of cost plus profit basis, Gross and net profit control techniques, performance analysis-sales/expenditure statements, internal and external audit, daily and periodic summaries of function e.g. guests/room/bed of performance relating to different sectors of the industry using standards and comparisons.

HTM413: PRINCIPLES OF HOSPITALITY AND TOURISM DEVELOPMENT (2 Units)
Hospitality and Tourism Concepts, leisure and recreation. An overview global tourism growth. Location and localization of hospitality industry. Destination planning and development; impact assessment of hospitality and tourism. Tourism promotion.

HTM415: SEMINAR IN EMERGING ISSUES IN HOSPITALITY AND TOURISM (1 Unit)
Each student will present an oral report based on library research on current problems and development in Hospitality and Tourism.

HTM417: RESTAURANT OPERATIONAL MANAGEMENT (3 Units)
Restaurant organization, staff uniforms, preparation and duties. Restaurant presentation and equipment. Procedure for service of a meal, social skills, Types of service, technical skills, Services area, beverages. The men, menu knowledge, covers for different occasions, control systems, meal service-breakfast, lunch, dinner, afternoon teas, banqueting, guardian service, licensing law.

HTM419: INTERMEDIATE TOURISM (3 Units)
Role of tourism within the broader context of leisure. Developing an appreciation of theoretical perspectives. Concepts and techniques used in the study of tourism. Factors which determine demand for tourism and identification of those which are of particular importance in the Nigerian context. Analysis of signification of tourism to Nigerian economy and ways in which the net contribution can be maximized. Assessment of measures taken by government worldwide to balance the growth of tourism with the necessity for adequate conservation.

HTM400: INDUSTRIAL ACTIVITY (6 Units)
This is the assessment of the student's industry supervisor.

HTM402: SIWES SEMINAR (2 Units)
Seminar presentation of industrial experience to be assessed by lecturers in the department.

HTM404: SIWES REPORT (5 Units)
Report to be bound and assessed by departmental supervisor.

HTM406: SIWES VISITATION (3 Units)
Grading of students during visits by their departmental supervisor.

HTM501: CULTURE AND HERITAGE TOURISM (2 Units)
Cultural tradition and ancient Nigeria. Museum, monuments, historical relics, famous art works of Nigeria Artists. Traditional Music, cultural festivals and events, cultural costumes and cuisines. National troupes and dances.

HTM503: FOOD AND BEVERAGE MANAGEMENT (2 Units)
Food product development process according to various concepts developing better production methods and utilising the equipment efficiently food production process, standardising menu items, pricing, cost control, portion control, planning and planning the work process and calculating working hours productivity input of foodservice operations, planning the product selection by taking the quality issues into account planning, developing, implementing and supervising the production process profitability calculations and menu sales mix analysis.

HTM505: HOSPITALITY AND TOURISM PRACTICUM (2 Units)
Student will have practicum experience in relevant areas of hospitality and tourism. Role playing as management of simulated hospitality establishment for the purpose of applying previously acquired knowledge and skills to real life situation.

HTM507: HOSPITALITY AND TOURISM MARKETING (2 Units)
Introduction to hospitality marketing, scope, elements and organization of hospitality marketing and sales. Theoretical concepts of marketing, marketing functions, cost, efficiency analysis. Marketing research and improvement techniques. Marketing mix and offering. Marketing and sales plan, Personal sales, Telephone sales, role and uses of the internet in marketing of hospitality and tourism products.

HTM509: TRAVEL OPERATIONS II (2 Units)
Principles of agency management and establishment. Various business functions of marketing; commercial management, information systems, organizational management, accreditations, legal aspects and consumer protection including major trends in travel distribution system (CRS) domestically and internationally. Functional differences between retail, wholesales and ground operations.

HTM511: FOOD SAFETY, HYGIENE AND SANITATION (2 Units)
Definition, purpose and importance of Food safety, Food safety matters relating to personnel. Examines and evaluates all phases of food sanitation, public health laws, and special problems in hospitality sanitation. Identification and sources of micro-organism in foodservice operations. The causes and prevention of Food borne illness are stressed. Principles and practices involved in safe handling of food products

including HACCP and GMP procedures. General Health and fitness. Kitchen design and equipment, kitchen hygiene, reservoirs of infection and ways of spread, vehicles of infection e.g. dairy products, meat, storage sterilization and disinfection, cleaning methods, control of infestation e.g. rats, Legislation relating to Nigeria Law on hygiene, health, safety and welfare. Health education.

HTM513: FACILITY MAINTENANCE IN HOSPITALITY OPERATIONS (2 Units)

Introduction to maintenance and engineering principles required in today's Hospitality and tourism operations. Definitions, designs and classification of institutional equipment; requirement and specifications for installation and operating large equipment; methods of evaluation of equipment performance; use and routine care of equipment and special maintenance practices of equipment and environment. Technical information needed to establish effective preventive maintenance programmes, role and function of maintenance department, basic electricity concepts and electrification of building, electric devices and appliances, plumbing, swimming pools, sewage, elimination of pollution.

HTM597: SEMINAR I (1 Unit)

Pre- data seminar of research report will be presented and assessed by the Academic staff of the department.

HTM515: Industrial Relations (2 Units)

Concept of Industrial Relations, Employee Labour Relations, Customer Relations and Management

HTM502: SECURITY AND LOSS PREVENTION (2 Units)

Safety and security. Security and hospitality industry. Security equipment; Security procedures covering guest concerns. Department Responsibilities in Guest and asset protection; Protection of funds. Emergency management. Safety in lodging property. Insurance in the hospitality industry. Different types of insurance. Problems of insurance in hospitality industry. Fire prevention, strategies for handling third party injuries in hospitality work places.

HTM504: TOURISM ECONOMICS (2 Units)

Concepts and relationships that result in creation of wealth by the tourism industry. Major economic phenomenon associated with tourism industry in developed and developing countries. Economic contributions and importance of tourism industry in Nigeria.

HTM506: STRATEGIC PLANNING AND DECISION MAKING (2 Units)

Using business and management concepts to conceptualize holistic view of hospitality operations; decision making, evaluating statistical and financial reports as a basis for decision making; applying elements of strategic management process in hospitality

organizations. Integrating knowledge of the principles of marketing management and hotel operations and applying these to selection of strategies needed in the formation of a market plan to achieve organizational objectives.

HTM508: HOSPITALITY AND TOURISM ETHICS (2 Units)

Ethical principles and global code of ethics for hospitality and tourism. Ethical inquiry into cultural, social, economic, political, and environmental concerns that surround hospitality and tourism. Developing and implementing code of ethics and ethical programs. Obligations of stakeholders in hospitality and tourism development. Ethical rights of the employees and entrepreneurs in the hospitality and tourism industry.

HTM510: BAR OPERATIONS (2 Units)

Bar designs, functions and organization, attributes of bar staff. Legislation regarding classification and grading. Quality classification, handling liquor, equipment requirements, combination drinks, storage and store control. Service techniques, (Vending, dispensing, disposables, traditional service, etc.), Glasses, decanters, serving features. Hygiene cleanliness of premises and equipment; legal aspects, drink occasions, merchandizing. Tea, coffee, espresso and cappuccino.

HTM 598: SEMINAR II (1 Unit)

Post- data seminar of research report will be presented and assessed by the Academic staff of the department.

HTM 599: PROJECT REPORT (4 Units)

The project report should be compiled, typed and bound in a format designed by the department and assessed by the internal and external examiners

DEPARTMENT OF NUTRITION AND DIETETICS

BRIEF HISTORY OF THE DEPARTMENT

The department of Nutrition and Dietetics was established in October 2004 as one of the programmes in the College of Agricultural Management Consumer Studies and Rural Development. The department developed from Nutrition and Dietetics option of Home Science and Management programme. Today, the Nutrition and Dietetics Department is one of the department in the newly created college, College of Food Sciences and Human Ecology (COLFHEC). The department offers programmes leading to the Award of Bachelors, Masters and Doctoral Degrees as well as Postgraduate Diploma in Nutrition and Dietetics.

PHILOSOPHY

The philosophy of the department is geared towards training of students in the field of Nutrition and Dietetics which engenders leads to a variety of roles in all areas of nutritional sciences as well as dietetic practices. In essence the programme Human Nutrition and Dietetics have their application both technologically and in scientific principles. Consequently, the department of Nutrition and Dietetics trains the students in the above broad areas ensuring the production of highly skilled man power through adoption of effective techniques of instructions, laboratory practical, field demonstration and workshop practice such that our graduates can choose to specialize within any of the relevant discipline.

MANDATE AND ACTIVITIES

The mandate of the department is to teach and conduct research in all aspects of Human Nutrition and Dietetics, hence extending knowledge to our immediate and remote environment. To achieve this mandates, the department is committed to achieving the following goals:

- To make the department a unique centre for Nutrition and Dietetics which encourage the study for practice of Human Nutrition and Dietetics.
- To focus research efforts on areas of Human Nutrition relevance for national development and global needs.
- To encourage inter disciplinary cooperation in research among staff and other external affiliation.
- To train competent future leaders for health, industrial sectors, government establishments and society leaders who will be sensitive to the health, socioeconomic welfare and provision of solutions to pressing needs such as management and prevention of nutritional diseases and set appropriate diet for people in normal nutritional conditions or those with illnesses in different settings e.g hospitals, food service industry institutions in the community and the nation at large.

- ❖ To equip graduates with the basic skills of nutrition and dietetic practices that is considered essential for further studies in the higher levels of education such as Masters and Doctorate.
- ❖ To introduce students to the food nutrients, and the general concept of good and bad nutrition in addition to the historical background on the development of nutrition as a science.
- ❖ To teach practical approaches to the solution of nutrition problem within the community.

Academic Staff

Name	Qualification	Specialisation	Designation
O. O. Onabanjo	B.Sc. (Umudike), M.Sc., Ph.D. (Abeokuta)	Community Nutrition	Reader/Ag. HOD
Ibiyemi O. Olayiwola	B.Sc., M.Sc., Ph.D. (Ibadan)	Human Nutrition	Professor
W. A. O. Afolabi	B.Sc., M.Sc., Ph.D. (Ibadan)	Community Nutrition	Reader
Silifat A. Sanni	B.Sc., M.Sc., Ph.D. (Abeokuta)	Food and Nutrition	Professor
Catherine A. Oladoyinbo	B.Sc. (Ife), M.Sc., P.hD. (Ibadan)	Human Nutrition	Lecturer I
Oluwafunke O. Akinbule	B.Sc., M.Sc. (Abeokuta)	Nutrition and Dietetics	Lecturer II
Opeyemi O. Bolajoko	B.Sc. (Nigeria), M.Sc. (Abeokuta)	Nutrition and Dietetics	Lecturer II

100 Level: First Semester

Course Code	Course Titles	U	L	T	P
BIO 101	General Biology I	2	2	-	-
BIO 103	Introduction Physiology I	2	2	-	-
BIO 191	Biology Practical I	1	-	-	1
CHM 101	Introductory Physical Chemistry	3	3	-	-
CHM 191	Practical Chemistry	1	-	-	1
MTS 105	Algebra for Biological Sciences	3	2	1	-
PHS 105	General Physics I for Biological Sciences	3	3	-	-
PHS 191	Physics Laboratory I	1	-	-	1
NTD 103	Introduction to Human Nutrition and Dietetics	3	2	1	-
GNS 102	Introduction to Nigerian History	1	1	-	-
GNS 111	Introduction to Social Problems	1	2	-	-
GNS 101	Use of English	2	2	-	-
	Total	**23**	**18**	**2**	**3**

100 Level: Second Semester

Course Code	Course Titles	U	L	T	P
AEM 102	Principles of Economics	2	2	-	-
BIO 102	General Biology II	2	2	-	-
BIO 192	Biology Practical II	1	-	-	1
CHM 102	Introductory Organic Chemistry I	2	1	-	1
CHM 104	Introduction to Inorganic Chemistry	2	2	-	-
CHM 192	Practical Chemistry II	1	-	-	1
MTS 106	Calculus for Biological Sciences	3	3	-	-
PHS 106	General Physics for Non-Major II	3	3	-	-
PHS 192	Physics Laboratory II	1	-	-	1
	Total	**17**	**13**	**-**	**4**

200 Level: First Semester

Course Code	Course Titles	U	L	T	P
NTD 201	Food Commodities	2	2	-	-
NTD 203	Nutrition and Microbiology Interface	1	1	-	-
NTD 205	Basic Anatomy and Physiology	2	1	-	1
NTD 207	Food Preparation and Management I	2	1	-	1
NTD 209	Human Biochemistry & Nutrition	2	2	-	-
AGR 201	General Agriculture	3	2	-	1
CSC 201	Introduction to Computer Science	3	2	-	1
STS 201	Applied Statistics for Non-Majors	3	3	-	-
GNS 107	Introduction to Psychology	2	2	-	-
GNS 108	Communication in French	2	2	-	-
	Total	**22**	**18**	**-**	**4**

200 Level: Second Semester

Course Code	Course Titles	U	L	T	P
NTD 202	Food Consumption Studies	3	2	-	1
NTD 204	Intro. To Clinical Nutrition	2	2	-	-
NTD 206	Human Anatomy & Physiology	2	1	-	1
NTD 208	Nutritional Biochemistry I	2	2	-	-
NTD 210	Diet Therapy and Hospital Practice I	3	2	-	1
FST 314	Principle of Food Analysis	2	2	-	-
FST 202	Food Biochemistry	3	2	-	1
ETS 206	Entrepreneurial Studies and Change Management	2	2	-	-
NTD 212	Nutrition in Diseases	2	2	-	-
HTM 206	Culinary French I	1	1	-	-
	Total	**22**	**18**	**-**	**4**

300 Level: First Semester

Course Code	Course Titles	U	L	T	P
NTD 301	Human Nutrition	2	2	-	-
NTD 305	Institutional Food and Personnel Management	2	1	-	1
NTD 307	Clinical Nutrition	3	2	-	1
NTD 303	Principles of Food Analysis & Experimental Techniques	3	2	-	1
FST 507	Food Additives, Toxicology and Safety	3	3	-	-
FST 305	General Microbiology	3	2	-	1
GNS 201	Writing and Literary Appreciation	1	1	-	
GNS 202	Elements of Politics and Government	1	1	-	-
GNS 203	Use of Library	1	1	-	-
GNS 204	Logic and History of Science	2	2	-	-
	Total	**21**	**17**	**-**	**4**

300 Level: Second Semester

Course Code	Course Titles	U	L	T	P
NTD 300	Industrial Activity	6	-	-	6
NTD 302	SIWES Seminar	2	-	-	2
NTD 304	SIWES Report	6	-	-	6
NTD 306	SIWES Visitation	2	-	-	2
	Total	**16**	**-**	**-**	**16**

400 Level: First Semester

Course Code	Course Titles	U	L	T	P
NTD 401	Recipe Development and Sensory Evaluation	2	1	-	1
NTD 403	Advanced Food Preparation and Management	2	1	-	1
NTD 405	International Nutrition	2	2	-	-
NTD 407	Assessment of Nutritional Status	3	2	-	1
NTD 409	Nutritional Biochemistry II	3	2	-	1
NTD 411	Public Health Nutrition	3	3	-	-
NTD 413	Institutional Food Production & Management	3	2	-	1
NTD 415	Entrepreneurial Studies in Nutrition and Dietetics	2	1	-	1
NTD 417	Advances in Nutrition & Health	2	2	-	-
NTD 497	Seminar I	1	1	-	-
	Total	**23**	**17**	**-**	**6**

400 Level: Second Semester

Course Code	Course Titles	U	L	T	P
NTD 406	Community Nutrition	2	1	-	1
NTD 408	Diet Therapy and Hospital Practice II	3	2	-	1
NTD 410	Nutrition Planning, Policy & Advocacy	3	2	1	-
NTD 412	Nutrition Education & Communication	2	1	1	-
NTD 498	Project Seminar II	1	-	-	1
NTD 499	Project	4	-	-	4
PHS 364	Energy and Environment	1	1	-	-
HSM 406	Consumer Education	2	2	-	-
FST 304	Food Microbiology	3	2	-	1
	Total	**21**	**11**	**2**	**8**

BACHELOR OF SCIENCE IN NUTRITION AND DIETETICS SYNOPSES

NTD103 – INTRODUCTION TO HUMAN NUTRITION AND DIETETICS (3 Units)

Definition and goals of studying Human Nutrition and Dietetics; Historical development, philosophy and objectives of Nutrition and dietetics; Career opportunities in Human Nutrition and Dietetics, including the necessary academic preparations and personal qualities required. Basic human needs and the role of Human Nutrition and Dietetics in meeting these needs; Nature of families and their nutritional needs; Major concept in Nutrition: Nutrients, their functions and sources; malnutrition; adequate diets; nutrient needs/requirements; Relationship between nutrition and health, including HIV/AIDS, Non Communicable Diseases; Human Nutrition and Dietetics in National Development. Roles, responsibilities and professional expectations of dietetics professional. Patients – dietetics professionals' relationship. Contemporary issues in Dietetics: functional foods, culture and dietetics, etc.

NTD201 – FOOD COMMODITIES (2 Units)

Food classification, Market surveys, Food selection and purchasing. Uses of foods. Foods and food tables. Different types of foods and agricultural products, their structures and composition. Vegetables, fruits, cereals, palm-wine, roots, and tubers; sugar cane, oil palm, meat, milk, cheese, butter, sausage, ham, fish, orange, mango and other juices. The processing and storage of these food products. Post-harvest physiology of food items. Development and marketing of raw food products, techniques and problems of developing, fabricating and merchandising. Ingredient regulations; taste panels, market testing, market research, and patents; making of human food from local foodstuff. Infective agents in food. Natural food toxins.

NTD202 – FOOD CONSUMPTION STUDIES (3 Units)

Food habits and Socio cultural aspects of food to include food behaviour, taboos and

food choice. Factors related to nutrition in Nigeria, including income, population, belief systems, labour, custom, seasonal variations, prestige/status. Execution of nutrition surveys of individual and groups in institution, in urban and rural setting. Methods used in nutrition surveys: anthropometry, food balance sheets, morbidity and mortality vital statistics, clinical signs, growth monitoring, growth chart methods construction and use of questionnaires, various parameters used in food consumption surveys. Food composition tables. Coverage of survey results. Methodology, data collection, processing and interpretation of data. Calorimetry, measurement of energy expenditure in man.

NTD203 - NUTRITION AND MICROBIOLOGY INTERFACE (1 Unit)

Importance of microbiology concept to human nutrition. Function of food micro-organisms and identification of micro-organisms. Importance of micro-organisms in food and nutrition. Food borne diseases and sanitary qualities.

NTD205: BASIC ANATOMY AND PHYSIOLOGY (2 Units)

Cell and its functions. An introduction to basic anatomy and physiology of the various systems. Nerves and muscles as agents of communication in the body. Kidney as osmo-regulator of the body. Blood and immunity, protective mechanisms of the body. Circulatory, respiratory, endocrine and digestive systems of the body. Special sense organs. Body homeostasis. Physiology of growth, pregnancy and lactation. Introduction and history of Physiology. Structure and function of cell membranes with emphasis on transport across cell membrane. Biophysical principles. Osmosis, diffusion, active transport. Homeostasis and control systems. Body fluid compartments, blood formation, functions, Haemostasis, haemorrhage, Electrophysiology of the heart, cardiac cycle, venous return, circulatory adjustment to exercise, physiology of respiration. Systemic or greater circulation, pulmonary or lesser circulation. The Heart, Chambers, Capacity, Heart walls: Epicardium, Myocardium, Endocardium and pericardium. Heart valves: atrioventricular and semilunar, Cardiac cycle and phases: systolic (contract) and diastolic (relaxation) Mechanism of valve functioning physiological properties of cardiac muscle. The basis of heart Automaticity (a) Sinoartrial node (paced maker) (b) Atrioventricular node (c) The Bundle of Hiss, Stanius experiment Heart Block, fibrillation, Refractory period of the cardiac muscle: Extra systole External manifestations of cardiac Activity: Apex beat, Heart Sounds, Bioelectrical activity of the heart and its recording: standard leads (ECG) chest leads, Control of cardiac Activity Nervous control.

NTD206: HUMAN ANATOMY AND PHYSIOLOGY (2 Units)

The course examines the human body, its general organization, structure and relations. Basic anatomical terminologies. Organization of the human body. The cell as a fundamental unit of structure and its functions, Cell membranes. Tissues, organs and

glands. Mitosis and meiosis. Embryology and Histology. Gross anatomy of the upper limb, lower limb, Abdomen, Pelvis and Perineum, and its relations, Head and Neck, Neuroanatomy. Reflex control: Intra-cardiac reflex responses – Reflex effects of the pericardium, reflex effects of the coronary pulmonary, atria and ventricular vessels, Effects of vascular reflexogenic zones, Reflex effects of visceral receptors. Effects of the cerebral cortex on cardiac Activity. Humoral control of Cardiac Activity, effects of electrolytes: K^+ & Ca^{2+} ions, effects of neurotransmitters, effects of hormones: Thyroxine, insulin, Gonadal hormones, Adrenaline and nor adrenaline. Heart Rate balance, Adaptation to abnormal environments, metabolic rate and temperature regulation.

NTD207: FOOD PREPARATION AND MANAGEMENT (2 Units)

Food preparation as a science and an art. Cooking methods and cooking terms. Basic method of preparing food from different food groups, cereals and cereal products (introduction to batters and dough), legumes, milk, cheese egg meat poultry and fish, milk and milk products fruits and vegetables, salads, roots and tubers. Selection and planning of meals for special occasions. Special techniques in food preparation. Planning adequate diets for the family, pregnant and lactating mothers, infants, adolescents and old members of the family. Effect of heat transfer on physical, nutritional and aesthetic value of food.

NTD208: NUTRITIONAL BIOCHEMISTRY I (2 Units)

Nutrient interrelationships in metabolism (Glycolysis Tricarboxylic acid cycle. Oxidative phosphorylation and hexose monophosphate shunt. Membranes and transport. Glycogen synthesis and breakdown. Oxidative deamination, transamination and urea cycle. Degradation of amino acid. Synthesis of fatty acids, oxidation of fatty acids). Biological oxidation. Mitochondrial and electron transport systems. Protein and nucleic acid synthesis. Environmental factors that alter nutrient requirements. Regulatory mechanism of various nutrients. Inborn errors of metabolism. DNA replication and transcription: protein biosynthesis and regulation. Cholesterol: Chemistry, synthesis and breakdown. Biochemical basis of hormone action. Drug metabolism. Mineral metabolism and role of calcium in bone formation.

NTD209: HUMAN BIOCHEMISTRY AND NUTRITION (2 Units)

Chemistry of cell constituents and their function (Chemistry of amino acids, amino acids as building blocks of proteins, reactions of amino acids. Properties of peptide bond. Levels of organization of proteins. Reactions of proteins. (b) Chemistry of sugars. Storage polysaccharides, reactions of carbohydrates. (c) Chemistry of fatty acids, triglycerides classification of lipids. Chemical reactions of fatty acids. (d) Chemistry and functions of nucleic acids. Biosynthesis of nucleic acids. Protein biosynthesis. (e) Chemistry of vitamins and coenzymes. Vitamin deficiency diseases. (f) Immunoglobulins. Water and its special properties). Introduction of the cell and

hierarchy of organization of living things: macromolecules, organelles, cells, Metabolism, Enzymes, Hormones (Structure and function of enzymes and hormones). Biochemical degradations, Detoxification, Biochemical techniques in disease screening and detection; Assessment of toxicant in environmental media etc.
Biosynthesis and functions of nucleic acid. Metabolism of nutrients under different physiological condition. Effects of diet on biochemical processes.

NTD 210: DIET THERAPY AND HOSPITAL PRACTICE I (3 Units)
Introduction to dietary management in disease states, consideration for factors in patients care plan, coordinated nutritional services for patients, therapeutic adaptation of the normal diet and problems of planning therapeutic diets using local foods. Principles or nutritional modification for the underweight, protein energy malnutrition, nutritional care plan and dietary treatment, nutrient need in surgery – postoperative nutritional care following gastrointestinal tract surgery; study of the diet for the vulnerable group, diarrhoea in infants; oral rehydration. Use of food exchange list. Nutritional care process.

NTD 214: INTRODUCTION TO CLINICAL NUTRITION (2 Units)
Malnutrition as a health problem. Classification of nutritional diseases. Diet and diet – related diseases (dental diseases, cancer, renal, liver, gastrointestinal, overweight and obesity, diabetes, hypertension, arthritis etc). Nutritional application to management of diseases. Nutritional problems of public health importance. Aetiology of nutrition related diseases. Prevention of nutrition problems. Inborn errors of metabolism and allergies. Nutrition in childhood, adolescence, pregnancy and lactation, adulthood, elderly. Nutrition and immunity. Parenteral nutrition. Optimal infant and young child feeding practices (emphasis on first 1000 days) including international good practices.

NTD301: GENERAL AND APPLIED NUTRITION (2 Credits)
Basic nutrition principles with special emphasis on nutrients; digestion and absorption and their problems. Control of appetite. Nutritive value of tropical foods and Nigeria diets; effect on season and cultural habits. Selection and formulation of balanced diets. Foetus as a parasite. Non-conventional foods. Emphasis will be on the special nutritional needs and principle of energy balance and energy needs. Students will be taken through different levels of analysis in estimating nutrient requirements for various groups. Basic nutrition evaluation methods (uses and limitations) will be discussed. This course provides an in-depth discussion on foods, their characteristics, effects of anti-nutrients, and nutrient – nutrient and nutrient-drug interactions. Dietary guidelines for adequate diet. Recommended dietary and nutrient intakes, safe levels of nutrient intake, principles of balance studies to determine nutrient requirement will be addressed. Concept of food and nutrition security.

NTD300 – INDUSTRIAL ACTIVITY (6 Units)

Students will be posted to recognized and relevant placement areas of their choice during the 6 months industrial training. The first 3months will be spent in hospitals or nutrition rehabilitation centres (the other 3 months could be in the hotels or food industry, and any other food and nutrition related establishment). Continuous assessment of students will be undertaken jointly by their industrial-based supervisors, ITF officials and institutional supervisors. Evaluation of industrial experience to be assessed by Industrial Supervisor.

NTD302 – SIWES SEMINAR (2 Units)

Students on returning to the institution will present a seminar on major duties performed and skills acquired during the training. Grades are allotted according to ITF directives. Seminar presentation of industrial experience to be assessed by lecturers in the department.

NTD304 – SIWES REPORT (5 Units)

Detailed report of student' experiences and activities during the period of attachment would be submitted by each student. Report to be bound and assessed by Departmental Supervisor.

NTD305: PERSONNEL AND INSTITUTIONAL MANAGEMENT (2 Units)

Organizational structures in food service institutions and hospitals. Effective staffing, staff recruitment, discipline and management. Staff welfare and work-output. Sanitation and safety. Planning institutional catering for all age groups. Menu planning, budgeting, book-keeping. Nutritional consideration of institutional meals.

NTD306 – SIWES VISITATION (3 Units)

This is to be submitted on each visit by the Departmental Supervisor and assessed by Department.

NTD307 – NUTRITION IN DISEASE (2 Units)

Nutrition in diseases of the GI tract. Nutrition and arteriosclerosis. Nutrition in kidney and hypertension. Effects of drugs and alcohol on nutrition. Nutrition in Diabetes. Nutrition and cancer. Nutrition and stress. Dietary implication of diarrhoea and tuberculosis. Nutrition in disease of the liver and gall bladder.

NTD309: CLINICAL NUTRITION (3 Units)

Advanced discussion of signs and symptoms of malnutrition (under and over-nutrition). Diet and diet – related diseases (dental diseases, cancer, renal, liver, gastrointestinal, hyperlipidemia, overweight and obesity, diabetes, hypertension, arthritis etc). Nutritional deficiency diseases- PEM, rickets,

osteomalacia/osteoporosis,beriberi, scurvy, pellagra, starvation and famine. Causes of nutritional problems of public health importance. Prevention of nutritional problems. Metabolic diseases, syndromes and allergies. Nutrition and immunity. Parenteral/Enteral nutrition. Parateral nutrition. Nutrition management and support at ICU, NRC and follow up at home of vulnerable groups e.g infants and pregnant mothers. Physical examination and clinical presentation of nutritional problems. Routine clinical care and management of malnutrition eg. EPM. Ethics of clinical nutrition. Definitions and ethical terms. Medical ethics. Pediatric nutrition. Nutrition support in patient care. Infectious diseases. Water and electrolytes. Illustrative cases.

NTD311: PRINCIPLES OF FOOD ANALYSIS AND EXPERIMENTAL TECHNIQUES (3 Units)

Introduction to physical and chemical methods for determining the constituents of food and diets. Data presentation and nutritional interpretation of such data will receive emphasis. Food quality and safety. Development of biological assay; chromatography; introduction to basic analytical equipment. Overview and practical use of different experimental techniques in nutritional science. Advantages and disadvantages of a range of techniques used in nutritional research including metablonomics, proteonomics and stable isotope work.

NTD 401: RECIPE DEVELOPMENT AND SENSORY EVALUATION (2 Units)

Definition and types of recipes. Needs for new recipes. Factors contributing to acceptability of recipe. Assignments in recipe development. Fundamental principles of food quality evaluation and development of standards, taste, flavour, shape, size, texture, colour and appearance; principles of recipe formulation and standardization. Food experimentation. Food acceptability trials - selection of participants, analysis of results; development and testing of economical and nutritious and locally available ingredients or new breeds (variety) of food stuffs. Practical classes on recipe development, preparation and testing; Sensory evaluation of foods including the use of Hedonic Scale. Reporting and interpretation of results; Application of principles of experimental foods to recipe development and testing.

NTD403: ADVANCED FOOD PREPARATION (2 Units)

The application of principles of nutrition and management to planning and preparation of meals for special groups (institutions: boarding schools, remand homes, orphanages, armed forces, prisons, hospitals, etc.), and occasions; developmental research and controlled experiments with food; developing food demonstration techniques; quality characteristics of some important traditional Nigerian food ingredients; strategies for improving nutrient value and utilization of the traditional and non-traditional meals.

NTD405: INTERNATIONAL NUTRITION (2 Units)

Global Nutrition situation. Globalization of food system, Concepts of food and nutrition security and strategies. Global harmony through nutrition, Population, gender and world economies. Food biotechnology and nutrition; Multiple burden of malnutrition. World food and nutrition policy formulations. Global environmental protection and nutrition. Nutrition programmes in emergencies (wars, famine, droughts, floods, fire, and other natural and manmade disasters). Political dimensions of malnutrition, nutrition and development. International conventions, goals and targets for improved nutrition. Roles of international relief agencies (FAO, UNICEF, WFP, and international NGOs). Food subsidy as part of social protection. Cross cutting issues in international nutrition i.e. food aids, food subsidy, nutrition sensitive interventions, Scale Up Nutrition Movement (SUN).

NTD406: COMMUNITY NUTRITION (3 Units)

Concept of community nutrition. Planning, organization and evaluation of Community Nutrition programmes (concept of community participation, social mobilization, participatory monitoring and evaluation). Application of nutritional assessment methodologies (anthropometric standards including use of MUAC tape, clinical signs, vital statistics, food consumption and laboratory methods) in community nutrition programmes. Use of growth and development chart, food budgets, food habits, surveys in rural and urban communities. Assessment of ecological factors. Applied nutrition programmes. School feeding programmes, Infant and young child feeding in the context of communication for development (IYCF in the context of C4D), Community Management of Acute Malnutrition (Supplementary and group feeding). Population and food supply.

NTD407: ASSESSMENT OF NUTRITIONAL STATUS (2 Units)

Methods used in nutrition assessment: anthropometry, biochemical, clinical and dietary intake assessment, vital statistics - mortality and morbidity rates, etc. Growth monitoring and promotion (including use of mid-upper arm circumference- MUAC tape). Various parameters used in food consumption survey – steps in planning food consumption studies, coverage of survey, methodology in collecting food consumption data (direct methods: weighing method, 24-hour dietary recall, estimated food record, etc) and indirect methods - food balance sheet, indirect weighing techniques, duplicate samples for chemical analysis, data processing and calculation of various nutrients, interpretation of data collected and use of survey results. The course also emphasizes socio-cultural patterns of food behaviour, food habits, and determinants of food choice and nutrition transition.

NTD 408: DIET THERAPY AND HOSPITAL PRACTICE II (3 Units)

Facility based management of severe acute malnutrition, advanced study in dietary

management of diseased conditions. Application of the basic nutritional principles and diet therapy in the treatment and management of organ specific diseases: endocrine, pancreas, liver, gall-bladder, kidney; acute and chronic heart diseases, atherosclerosis, hypertension, and various metabolic diseases; hyperlipidemia, and disease of the nervous system. Dietary management of allergy and allergic reactions, skin diseases, inborn errors of metabolism and their nutritional care, nutrient-nutrient interaction; nutrient-drug interaction. Nutritional care Process. Ethics in Nutrition and Dietetics.

NTD 409 – NUTRITIONAL BIOCHEMISTRY II (2 Units)

Bioenergetics. Metabolism and biochemical inter-relationships of various nutrients in the body. Metabolism of nucleic acids. Metabolism in nutritional diseases: Diabetics, PEM, Gout, Hyperlipidaemias. Inborn errors of metabolism. Toxins and detoxification in animal systems.

NTD 410: NUTRITION PLANNING, POLICY AND ADVOCACY (3 Units)

Applied nutrition programme planning, implementation, monitoring (including nutrition surveillance), evaluation and impact assessment at household, village and at national level. Role of Agriculture, health and education in nutrition programme implementation. Economics of malnutrition; sustainability issues in Nutrition and nutrition related policies. Food laws and regulations. Nutrition labelling. Applications of codex alimentarius commission. Code of marketing of breast milk substitutes (BMS). Poverty reduction and nutrition security. Multisectoral linkages in Agriculture, Nutrition, Health and Education sectors. Nutrition in development; Nutrition and social protection: food stamp, food subsidy etc. Basic concepts of advocacy and communication for development.

NTD 411: PUBLIC HEALTH NUTRITION (2 Units)

UNICEF conceptual framework of causes of malnutrition. Nutrition problems of public health importance in Nigeria. Principles of Nutrition Epidemiology. Socio-economic effect of nutrition problems within different socio-economic groups. Dietary acculturation and Nutrition Transition. Effect of malnutrition on physical and mental development. Steps to improve health and nutritional status of people - Micronutrient deficiencies control (fortification, supplementation, and dietary diversification), Essential Nutrition actions for child survival and development. Food sanitation and safety. Environment and nutrition. Nutrition and Infection including HIV/AIDS and other communicable diseases. Nutrition and non-communicable diseases. Implementation of nutrition in primary health care setting in Nigeria. Nutrition and social protection – safety nets and resilience. Maternal and child nutrition including breastfeeding, complementary feeding, care practices and child spacing.

NTD 412: NUTRITION EDUCATION AND COMMUNICATION (2 Units)

The course should be delivered using the FAO ENACT course module. Definitions, goals and objectives of nutrition education; Learning objectives; Factors influencing teaching and learning; Nutrition problems and causes; The place of nutrition education in solving nutrition problems; Activity-oriented programmes adopted in fostering nutrition education and nutritional status of people; Communicating nutrition education – the source, the message (content) and the recipient; Nutrition education approaches; Learning methods (tutorials and mini projects) in nutrition education; Instructional technologies used in nutrition education; Programme planning and evaluation in nutrition education; Principles of nutrition advocacy; Behavioural change communication for healthy living; Information, education and communication (IEC) strategies; Communication skills and technical information.

NTD 413: INSTITUTIONAL FOOD PRODUCTION AND SERVICE MANAGEMENT(2 Units)
Meal planning and principles of cooking as applied to quality food production. Purposes of cooking food. Standardization of menus. Cooking procedures with reference to quality and cost operation and care of equipment. Organization of storage and work layouts. Use of heat; effects of various methods of heat, application on physical, nutritional and aesthetic aspects of food. Enzymatic and microbiological aspects of food. Enzymatic and microbiological aspects of food preparation. Measuring techniques. Leavening agents; flour mixes. Modern and traditional equipment and procedures in relation to time, energy, monetary expenditures and health. Organizational structures in food service in institutions and hospitals; Effective staffing, staff recruitment, discipline and management; Staff welfare, work output motivation/incentives; Sanitation and safety; Menu planning and budgeting; Book keeping; Nutritional consideration of institutional meals; Modern and traditional equipment and procedures in relation to time, energy, monetary expenditure and health; Selection and care of equipment for maximum benefit.

NTD 415-ENTERPRENEURAL STUDIES (3 Units)
Definition of Entrepreneurial. Principle of management. The essence of business and entrepreneurial for socio-economic development. Creativity factors in micro-enterprise Initiatives. Steps and legal framework for establishing an enterprise. Financial record keeping and accounting statements. Fraud prevention and control. Problem of indigenous enterprises in a developing country. Consultancy work in human nutrition and dietetics assignment on core courses in dietetics and nutrition consultancy.

NTD 417: RECENT ADVANCES IN HUMAN NUTRITION AND HEALTH (2 Units)
Understanding the Role of Nutrition in Human Genome Evolution. Nutrigenomics, metabolomics, proteomics (Definitions and Advances of this new Science). New Advances about the effect of vitamins on human health: vitamin Supplements and

Nutritional Aspects. Recent advances in knowledge of micronutrients of public health importance (zinc, iron, vitamin A, iodine, folic acid, etc.) and human health. Definitions of emergency? Concept of food security and nutrition in emergencies; types and causes of emergency; Nutrition in Emergency preparedness. Nutrition emergency. Nutritional problems of Internally Displaced Persons (IDPs) and refugees; humanitarian response to emergencies; food aids and nutrition; information systems in emergency situations. Nutrition procedure in times of disaster including famine relief operations nutrition rehabilitation centres. Concept of health, recognition and coping with problems. Levels of prevention. Environmental sanitation. Diseases spread by water, food and air. Common health problems in Nigerian communities. Diseases that can be prevented by immunization. Governmental and voluntary agencies' efforts in solving health problems. Accidents in and outside the home. Family adjustments to health crisis and community organization in health. Nutrition and infections

NTD 419: SEMINAR IN NUTRITION AND DIETETICS (2 Units)

Each final year student is expected to present an oral report based on library researched problems (desk review) and developments of current interest in the field of Nutrition and Dietetics.

NTD 421: RESEARCH METHODS IN NUTRITION AND DIETETICS (2 Units)

Experimental techniques and research methodologies currently in use in nutritional studies e.g. experimental design, balance studies, chemical and biological essays, Techniques used in nutrition studies involving laboratory animal and man PER, NPU, BV, NDPE, etc. use of experimental diets. Data presentation, interpretation and discussion of results. Quantitative and Qualitative Research Methods, Research Ethics, Use of Computer in Research (Internet Access); Research design and data analysis. Qualitative and Quantitative data Samples and mixed methods and sampling methods, types of data and sample size determination. Types and design of questionnaire, Focus Group Discussion, Key Informant Interviews, Environmental Sampling, data collection, Data analysis including use of computer based analytical packages e.g. SPSS, EPI-INFO, and STATA etc.

NTD 497 – PROJECT SEMINAR I (1 Unit)

NTD 498 – PROJECT SEMINAR II (1 Unit)

NTD 499 – PROJECT (4 Units)

The student is expected to study critically under controlled supervision by an academic staff, a special problem in the area of nutrition and dietetics, present a project report and defend his/her findings before a panel of examiners.

COLLEGE OF MANAGEMENT SCIENCES

BRIEF HISTORY OF THE COLLEGE

The College of Management Sciences was established in 2011 following the Directive of the President and Commander-In-Chief of the Federal Republic of Nigeria, Dr. Goodluck Jonathan, GCFR, to all specialized Federal Universities to diversify their academic programmes to enhance access to higher education in the country. The Management of the University set in motion the machinery for needed compliance.

Management subsequently constituted appropriate committee of academics and professionals in the fields of Management Sciences, Law and Medicine to develop strategic and academic briefs to aid the establishment of the College of Management Sciences, Law and Medicine respectively.The College of Management Sciences was established with the following Departments that constitute respective degree programmes. These programmes have been accredited by National University Commission (NUC)

i. Accounting
ii. Banking and Finance
iii. Business Administration
iv. Economics
v. Entrepreneurial Studies

GENERAL PHILOSOPHY OF THE COLLEGE

The general philosophy is to develop the mind, impacting both theoretical and practical knowledge to enable the individual to develop self-confidence, with the aim of being innovative and self-reliance in the field of Management Sciences.

MISSION OF THE COLLEGE

To support and advance teaching, learning and research activities in Management Sciences in the University by placing appropriate priority on relevance of curriculum to immediate environment and stakeholders, industry and national policies.

VISION

To build a College that will comprise individuals committed to the mission and values of FUNAAB and imbued with the highest ethos of academic discipline and excellence and to produce graduates able to compete with the products of high ranking Universities in the world.

Dean's Office

Name	Qualification	Designation
A. O. Salami	B.Sc., MBA, M.Sc(Ilorin), Ph.D(Ogbomoso)	Professor and Dean
A. J. Abiodun	B.Sc, MBA, M.Sc, (Ilorin) Ph.D (Ota)	Senior Lecturer and Deputy Dean

DEPARTMENT OF ACCOUNTING

Philosophy

The Department is geared towards producing efficient and effective scholars and practitioners of Accounting resting on the need to develop the discipline as a hub of all activities in the Public and Private sectors of the Nigerian economy, and beyond.

Objectives

I. To produce a world class graduate of accounting that can compete globally.
ii. To create a means whereby young men and women will be proficient in teaching, professionalism and other services career.
iii. To inculcate discipline and moral ethics in our products with a view of becoming good team leaders and role models.
iv. To make our graduates to be sensitive to socio-economic as well as environmental factors and conditions with their respective influence to Accounting discipline/ thought.
v. To provide effective mechanism for interpersonal relationship and leadership skills for working in a team and organization.

Academi Staff

Name	Qualifications	Specialisation	Designation
J. Olabisi	B.Sc (Ife), M.Sc (Lagos), M. Phil (Ife), Ph.D. (Ilisan), ACTI, ACMA, ACA.	Financial Accounting, Oil & Gas Accounting, International Accounting and Public Sector Accounting.	Senior Lecturer and Ag. Head of Department
S. O.Kajola	B.Sc., M.Sc. (Lagos), PhD (Ogbomosho) AMNIM,MIMC, MNIMN, FCEA, ACTI, FCA.	Cost/Management Accounting, Taxation, Financial Statement Interpretation and Corporate Governance	Senior Lecturer
T. O. Agbatogun	B.Sc (Ogun),M.Sc. (Ilisan) MBA (Ogun)	Financial Management Financial Accounting	Lecturer II
A.T. Babatolu	B.Sc (Lokoja), M.Sc (Benin), MISMN, MNIM	Accounting Theory, Financial Accounting and Accounting Ethics.	Lecturer II
O.O. Oworu	B.Sc (Ilisan), MBF (Ibadan)	Financial Accounting, Accounting Ethics and Corporate Governance	Lecturer II

100 Level: First Semester

Course Code	Course Title	U	L	T	P
ETS 101	Entrepreneurial Studies	2	2	-	-
CMS101	Mathematics for Management Sciences I	3	2	1	-
ACC 101	Principles of Accounting & Reporting I	3	2	1	-
ECO 101	Introduction to Microeconomics	3	2	1	-
BFN 101	Introduction to Finance	3	2	1	-
GNS 101	Use of English	2	2	-	-
GNS 105	Introduction to Logic and Philosophy	2	2	-	-
BAM 101	Introduction to Business 1	3	3	-	-
	Total	**21**	**17**	**4**	

100 Level: Second Semester

CourseCode	Course Title	U	L	T	P
ECO 102	Introduction to Macroeconomics	3	2	1	-
CMS 102	Mathematics for Management Sciences II	3	2	1	-
CMS 104	Introduction to Computer Science	3	2	1	-
GNS 102	Introduction to Nigerian History	1	1	-	-
ACC 102	Principles of Accounting & Reporting II	3	2	1	-
BAM 102	Introduction to Business II	3	2	1	-
BFN 102	Introduction to Money and Banking	3	2	1	-
GNS 104	History and Philosophy of Science	2	2	-	-
GNS 106	Introduction to Sociology	2	2	-	-
	Total	**23**	**17**	**6**	

200 Level: First Semester

CourseCode	Course Title	U	L	T	P
CMS 201	Statistics for Management Sciences I	3	2	1	-
ECO 251	Principles of Microeconomics	2	2	-	-
ECO 253	Principles of Macroeconomics	2	2	-	-
ACC 203	Cost Accounting I	3	2	1	-
**ACC 201	Financial Accounting & Reporting I	3	2	1	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
ACC 205	Business Law I	3	2	1	-
GNS 203	Use of Library	1	1	-	-
BAM 313	Production Management	3	2	1	
BAM 215	Business Communication Skills	2	2	-	-
	Total	**23**	**18**	**5**	

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
CMS 202	Statistics for Management Sciences II	3	2	1	-
CMS 204	Applications of Computer	3	2	1	-
ACC 204	Cost Accounting II	3	2	1	-
**ACC 202	Financial Accounting & Reporting II	3	2	1	-
GNS 202	Elements of Government	3	2	1	-
ETS 206	Entrepreneurship and Change Management	2	2		
	Total	**20**	**14**	**6**	
	Electives (minimum of 3 unit)				
BAM 214	Human Resource Management	3	2	1	
ETS 210	Customers Relationship Management	**3**	**2**	**1**	

** ACC 102 is a Pre-Requisite to ACC 202

300 Level: First Semester

CourseCode	Course Title	U	L	T	P
**ACC 301	Intermediate Financial Accounting & Reporting I	3	2	1	-
ACC 305	Management Information System	3	2	1	-
ACC 311	Operations Research	3	2	1	-
ACC 309	Business and Finance	3	3	-	-
BAM 301	Management Theory and Practice	3	3	-	-
***ACC 303	Performance Management I	3	2	1	-
* Elective		3	2	1	-
	Total	**21**	**16**	**5**	
	ELECTIVES				
*BAM 305	Organisational Behaviour	3	2	1	
*ECO 357	International Economics	3	2	1	

** ACC 201 is a Pre-Requisite to ACC 301 *** ACC 203 is a Pre-Requisite to ACC 303

300 Level: Second Semester

CourseCode	Course Title	U	L	T	P
ACC 312	Accounting Professional Ethics, Values and Corporate Governance	3	2	1	-
***ACC 304	Performance Management II	3	2	1	-
ACC 306	International Accounting	3	2	1	-
ACC 310	Accounting Theory	3	2	1	-
**ACC 302	Intermediate Financial Accounting& Reporting II	3	2	1	-
ACC 308	Accounting Research Methods	3	2	1	-
* Elective		3	2	1	-
	Total	**21**	**14**	**7**	
	ELECTIVES				
* ECO 354	Basic Econometrics	2	2		-
*BAM 302	Practice of Entrepreneurship	3	2	1	-

** ACC 202 is a Pre-Requisite to ACC 302 *** ACC 204 is a Pre-Requisite to ACC 304

400 Level: First Semester

CourseCode	Course Title	U	L	T	P
ACC 401	Audit & Assurance	3	2	1	-
ACC 403	Taxation	2	1	1	-
ACC 405	Strategic Financial Management I	2	1	1	-
ACC 409	Public Sector Accounting & Finance	3	2	1	-
BAM 401	Business Policy and Strategy	3	2	1	-
BAM 403	Analysis for Business Decision	3	2	1	-
ACC 407	Advanced Financial Accounting & Reporting	2	1	1	-
ACC 411	Seminar I	1	-	-	-
	Total	**19**	**11**	**7**	

400 Level: Second Semester

Course Code	Course Title	U	L	T	P
ACC 402	Advanced Audit & Assurance	3	2	1	-
ACC 404	Advanced Taxation	2	1	1	-
ACC 406	Strategic Financial Management II	2	1	1	-
ACC 499	Research Project	6	-	-	-
ACC 410	Case studies in Accounting	3	2	1	-
ACC 408	Corporate Reporting	2	1	1	-
ACC 412	Seminar II	1	1	-	-
	Total	**19**	**8**	**5**	

COURSE SYNOPSES

ACC 101: PRINCIPLES OF ACCOUNTING AND REPORTING I (3 Units)

Accounting and reporting concepts: basic concepts and conventions of accounting the nature, scope and purpose of accounting; the accounting functions and its relationship with the information system of an organization. Users and uses of accounting information; The accounting equation; Source documents and subsidiary books (petty cash books, cash books, day books and Journals); Double entry principles and ledger accounts; The trial balance – uses, limitations and extraction from the ledgers; Types and correction of errors, uses of suspense account; Bank reconciliation statements; Preparation of simple final accounts of a sole trader; End of year adjustments in final accounts e.g. accruals, prepayments, unrecorded drawings of inventories etc. Provisions and reserves; Elementary knowledge of: International Financial Reporting Standards (IFRS); International Accounting Standards (IAS).

ACC 102: PRINCIPLES OF ACCOUNTING & REPORTING II (3 Units)

Basic knowledge and Application of International Financial Reporting Standards (IFRS) to the preparation of final accounts of a sole trader; Accounting regulations and standards; Accounting for noncurrent assets and depreciation, element of cost, initial measurement and recognition, basic accounting for depreciation and accounting for disposal (IAS 16); Bad debts and provision for bad and doubtful debts, provision for discounts allowable; Capital and revenue expenditure; Control accounts/self-balancing ledgers and their uses; Incomplete records and single entry book-keeping; Accounts of non-profit making organizations; Preparation of final accounts of sole traders and manufacturing accounts with adjustments; preparation of extended trial balance; Inventory valuation methods (IAS 2). Basic knowledge of: International Financial Reporting Interpretation Committee (IFRC); International Accounting Standard Board (IASB); Financial Reporting Council of Nigeria (FRCN) and International Accounting Standards Committee (IASC).

ACC 201: FINANCIAL ACCOUNTING & REPORTING I (3 Units)

Review of double entry principles. Overview and Applications of relevant International Financial Reporting Standards such as IFRS 3 to the preparation of partnership accounts: Profit and loss appropriation accounts; partners current and capital accounts; Admission and retirement of partners and dissolution of partnership business; Change in Profit and Loss sharing ratio in partnership business; treatments of goodwill and premiums in partnership with regards to IFRS 3; Introduction to company accounts; share capital; issue of shares and debentures; Preparation of unpublished final accounts of limited liability companies; Analysis and interpretation of final accounts including uses and limitation of accounting ratios.

ACC 202: FINANCIAL ACCOUNTING & REPORTING II (3 Units)

Redemption of shares and debentures; the uses of sinking fund; Consignment accounts, goods on sale or return; Royalties accounts; Containers accounts; Underwriters accounts; Unit trust accounts; Accounting for Hire purchase and Leasing IAS 17; Joint venture arrangements IFRS 11; Consignment Account; Voyage Account; Bill of exchange; Investments property accounts IAS 40; stock loss valuation and computation of insurance claims; Departmental accounts. Preparation of non-current assets register with reference to IAS 16; Pension and provident fund accounts; Estate agencies and Property Company's account; Unit trust accounts; Oil & gas accounts; farmer's accounts.

ACC 203: COST ACCOUNTING I (3 Units)

Scope and objective of Cost Accounting; nature and classification of cost, element of cost; material, labour; overhead; Cost Accounting system: integrated and inter-locking system, Costing methods; job and Batch Costing, Contract Costing; Process Costing, Joint and by product costing.

ACC 204: COST ACCOUNTING II (3 Units)

Budgeting and Budgetary Control; standard Costing and Variance analysis; Marginal and absorption costing; Cost volume profit analysis; Cost control and Cost reduction; Cost data for short term decisions.

ACC 205: BUSINESS LAW I (3 Units)

Topics covered include sources of Nigerian Law, the administration of justice in Nigeria, distinction between civil and criminal law, real and personal property etc., Law of contracts, partnership law, the meaning of corporate personality and the doctrine of ultra vires.

ACC 206: BUSINESS LAW II (3 Units)

Topics include laws relating to commercial transaction (agency; sales of goods; hire purchase & leasing; carriage of goods; negotiable instruments; money lending, surety ship and guarantee, and basic provisions of the Nigerian law governing insurance and banking institutions.

ACC 208: COMPANY LAW (2 Units)

Topics covered include, company law, type of companies, company formation, procedure, documentation, issue and transfer of shares and debentures, prospectus and statutory books, meetings and resolutions, duties of officers (directors, secretary, auditors, etc), provisions relating to disclosure in corporate accounts, reconstructions, amalgamation and takeovers. Insolvency, executorship and trusteeship, the laws relating to bankruptcy, deeds of arrangement, voluntary and compulsory liquidations; disposition of property by wills and letters of administration, etc.

ACC 210: ACCOUNTING LABORATORY/ WORKSHOP (1 Unit)

The course expose students to accounting packages such as Oracle, Sun Account, Quick book, Lawson utility, Peach Tree, SAP, Sage, SPSS, WordPerfect, Microsoft, Lotus, Excel, Quarto-Pro, TSP, E-View, etc to the preparation of financial statement.

ACC 301: INTERMEDIATE FINANCIAL ACCOUNTING & REPORTING I (3 Units)

Applications of relevant IFRS to the preparation of financial statements of partnership business: Dissolution of partnership business (including wholesome and piecemeal realization and distribution); amalgamation and absorption of partnerships; conversion of partnership to Limited Liability Company; Purchase of business. Preparation of published financial statement in line with Company and Allied Matters Act (2004) as amended. Statement of value added; statement of cash flow; Branch accounts; Accounts of Banks and insurance companies in line with IFRS 7, Banks and Other Financial Institutions Act (BOFIA) and Insurance Act; Farmers' accounts.

ACC 302: INTERMEDIATE FINANCIAL ACCOUNTING & REPORTING II (3 Units)

Theoretical and regulatory framework for the Preparation of Group Accounts in line with IFRS 3, IFRS 10, IFRS 12; Consolidated and separate financial statements in line with IAS 27; investment in associate in line with IAS 28; This includes adjustments, group structure & controlling interest; emerging issues in group accounts; Disclosure requirements for the exclusion of subsidiary from consolidation in line with CAMA 2004, as amended and IAS 27. Cancellable and part cancellable items with their treatments in the books; concepts of minority interest such as parent concept, entity concept and proprietary concepts; treatments of purchased goodwill and non-controlling interest on consolidated financial statement; Group statement of comprehensive income in line with IFRS 3; Consolidated statement of cash flows in line with IAS 7; financial statement analysis and interpretations using ratio.

ACC 303: PERFORMANCE MANAGEMENT I (3 Units)

The application of statistical techniques for the presentation of accounting information. Information for decision-making; elements of decision-making, Cost concepts and decision; used, meaning and measurement of relevant incremental and marginal costs; meaning of opportunity costs; optimization, with limiting factors; idle capacity. Applications of decision making; adoption of new products mix; alternative methods of manufacture; discontinuing product lines; make or buy and sell or process further; shut down and temporary closure, conversion, etc. Capital budgeting techniques under certainty; under risk and uncertainty; CVP analysis where multiple products are involved, Linear programming, Inventory control model.

ACC 304: PERFORMANCE MANAGEMENT II (3 Units)

Learning curve theory; transfer pricing system; divisional performance evaluation;

literature, problem conceptualization in research, population, sample and sampling techniques; pilot study and pretesting; uses and limitations to scientific research; types of scaling; quasi statistical initiative analysis; validity and reliability of research instrument; writing preliminary pages of a project such as abstract, acknowledgements etc; components of a complete research project which include the five (5) chapters of a project understanding of bibliography and references.

ACC 309: BUSINESS & FINANCE (3 Units)

Business processes and environment; the role of finance: basics of business finance, basic models for business analysis; investment decisions; role of accountancy profession and management and organizational behaviour.

ACC 310: ACCOUNTING THEORY (3 Units)

Accounting postulates, concepts and principles involved in policy making; the nature and role of accounting theory. Accounting methodology and needs for a consistent theory; Development of accounting theory and regulatory standard Board (FRCN) – role, structure, and process leading to the issue of standards; Accounting convergence leading to the development of IFRS; Impact of government on development of accounting theories and principles. Theory of income measurements – revenue and expenses, gains and losses (including extra ordinary items and exceptional items); the nature of income and income as a means of consumption; Comparison of views of Fishers and Hicks; Hicks' ex-post and ex-ante measure of income and conventional accounting definition of income.; The relationship between income and value; the theory of financial reporting; the study of accounting standards as they affect reporting entities and the inflationary Accounting.

ACC 311: OPERATIONS RESEARCH (3 Units)

Introduction to Operations Research; models and modelling; decision theory; Linear programming; Simulation; Sensitivity analysis, Inventory control, Transportation model, Game theory; Markov chain; Queuing theory and Network analysis.

ACC 312 ACCOUNTING PROFESSIONAL ETHICS, VALUES AND CORPORATE GOVERNANCE (3 Units)

Concepts of ethics and values; Culture and issues in accounting; ethics and law in business including values; Ethics versus law; Human rights monitoring and enforcement agents (EFCC, ICPC, the Police, The Code of Conduct Bureau, FRCN, Standard Organization of Nigeria, NDLEA, and NAFDAC); Mandate and operational dimensions of accounting and business ethics; General business ethics including professional ethics of Accounting; Creative accounting (earnings management); income smoothening and whistles blowing; Corporate governance model in business and international best practices. Meaning of corporate governance; Difference between governance and management; purpose of good governance; Agency theory,

budgeting improvement techniques; replacement analysis; advanced standard costing & variance analysis and new developments in management accounting (JIT, TQM, ABC, etc.) , strategic performance management; impact of information technology (performance and management systems; systems design, acquisition and development process).

ACC 305: MANAGEMENT INFORMATION SYSTEM (3 Units)

Introduction to and Fundamental of Data Processing – brief history and conventional data processing methods. Manual methods and mechanized methods. Classification of systems and their relative merits and objectives; total systems and sub-system in relation to accounting practices and principles; Data Processing and Management Information System (MIS). The organization of MIS, including the use of mechanical and electronic accounting machines, flow charting and principles of system design and documentation. Managerial uses of the information output as a basic of developing criteria and system information needs of management and design of MIS. Computer and data Processing evolution of the computer programming languages used in business electronic data processing (EDP) methods; batch processing, real-time processing and the management of EDP. Business Systems, hierarchical structure of organizations, the sub-optimization issue.

ACC 306: INTERNATIONAL ACCOUNTING (3 Units)

Historical background of International Accounting Standards; Argument for and against international accounting standards; Causes of international differences; International classification of financial reporting; The role of accounting in global markets. Accounting in various countries of the world such as United Kingdom, United States, France, Germany, Japan, China, Russia –comparative accounting; Harmonization of international accounting standards through the development of IFRS; Foreign currency translation. Foreign branch accounts. Consolidation involving foreign subsidiaries and associates; International financial analysis; International taxation and transfer pricing; Examination of accounting and control problems of multinational corporations; Methods of transfer of dividends; cost of foreign products; funds foreign directors.

ACC 308: ACCOUNTING RESEARCH METHODS (3 Units)

Basic concept in scientific enquiry; scientific research concepts; theories, laws, fact, reality, hypothesis, research design, principle of causality, concepts and constructs; Research proposal; Classification and types of research (surveys, experiments, ex-factor motivation research); meaning of scientific research, basic and applied research. Research designed; Qualities of a researchable topic; Reasons for research; the research proposal; data collection techniques –survey research and methods, Observation, interview, experiments; questionnaire (mailed and self-administered); problem identification in research. Meaning and formulation of hypothesis; Review of

transaction cost theory, stakeholder theory, Stakeholder value approach, enlightened stakeholder approach, stakeholder approach; Governance, risk and financial stability; the balancing of conflicting objectives. Potential consequences of poor corporate ethics, corporate codes of ethics,

ACC 401: AUDIT AND ASSURANCE (3 Units)

The nature and purpose of an audit. The role of internal audit, external audit, reporting responsibilities, appointment, dismissal, resignation. The concepts of "true and fair", "independence of auditor". Relationship of auditors to directors, shareholders and other financial statements' users. Audit planning –initial review of accounting system, evaluation of internal control system and procedures, development of an audit programme, audit procedures – vouching of accounts, verification of assets, sampling techniques, flow charting, stock taking procedures, latter representation. The Audit report – statutory requirement for audit report-Companies Act (2004). Types of Audit report; professional requirements duties and powers under statue and case law, independence. Basic litigation and fraud examination theory, Identification of financial fraud schemes, Exploration of the legal framework for damages and Fraud Assessment and methodologies for fraud and damages. Review of earnings management and financial reporting fraud, Computer forensics, corporate governance and ethics, Study of Actual litigation and fraud Cases, involving roles of forensic Accounting.

ACC 402: ADVANCED AUDIT AND ASSURANCE (3 Units)

Legal, regulatory and ethical issues; accepting engagement and managing assignments; planning and undertaking work (planning and undertaking work; assessment of risks, internal controls, international financial control; evaluation of accounting treatments),; drawing conclusion and reporting (including applicable audit standards; international auditing practice statements; international standards on review engagements; international standards on assurance engagements; international standards on related service, IFAC statements); specialized audits and investigations; application of information technology in auditing.

ACC 403: TAXATION (2 Units)

Introduction and tax administration (introduction to taxation; tax administration in Nigeria; assessments and objections, appeal and remittances); personal income tax (taxation of employment income; taxation of trust, settlements and estates; taxation of investment income); business income (sole traders, partnerships, limited liability companies; specialized businesses; tertiary education); transactions taxes (withholding tax, value added tax, stamp duties).

ACC 404: ADVANCED TAXATION (2 Units)

Tax planning and advice (including tax incentives, tax avoidance, tax planning and tax

evasion); capital gains tax; companies tax (companies income tax; double taxation; pioneer legislation); tax audit and investigation; transfer pricing; petroleum profits tax;

ACC 405: STRATEGIC FINANCIAL MANAGEMENT I (2 Units)

Topics include financial environment and role of financial managers (analyse and evaluate financial objectives within the strategic planning process; assess and advise on key shareholders of organizations and the interests of each shareholder group; evaluate the impact of macro-economics and the role of international financial institutions in strategic financial management; evaluate and apply the concept of corporate social responsibility, its relationship with to the objective of maximizing shareholders' wealth; assess and advise on agency theory and its relevance to financial managers; treasury management emerging issues in financial management); business analysis (evaluate and assess the value of businesses and shareholder value giving advise based on business scenarios using appropriate investment appraisal techniques; working capital management; interpretation of investment appraisal results) and financial analysis (identify capital requirements of business and assess financing options; capital gearing; group reconstruction; cost of capital; portfolio analysis and bond evaluation based on business scenarios; development of proposals on long-term business plans from prescribed information; preparation and evaluation of key financial management indicators based on the published financial statements of an organisation).

ACC 406: STRATEGIC FINANCIAL MANAGEMENT II (2 Units)

Introduction: role, functions and objectives of Financial Management, Techniques for Financial Management; Financial Statement Analysis, discounted cash flow techniques, capital structure model, dividend valuation model, capital asset pricing and option pricing models; Financial Management problems; Working Capital Management, Capital Budgeting, Capital Structure, Agency Conflicts and Dividend Payout Policy; Mergers and acquisition/ corporate restructuring and management of financial risks.

ACC 407: ADVANCED FINANCIAL ACCOUNTING & REPORTING (2 Units)

Reporting concepts and applications of relevant Standards (IFRS; IAS) to company re-organization such as internal and external re- organization; treatments of various items where the scheme of capital reduction has been formulated, principles to be applied when capital reduction scheme is suggested. External re-organization: merger, takeover, absorption, amalgamation and acquisition; Bankruptcy and liquidations; foreign subsidiaries company; foreign currency translation: various methods of translation, treatment of various items in foreign currency translation; foreign branch account, foreign joint venture accounts.

ACC 408: CORPORATE REPORTING (2 Units)

Current issues in reporting framework; formulation of accounting policies; preparation and reporting information for financial statements and notes; analysis and interpretation; financial and business analysis; applicable accounting standards (preface to IFRS, conceptual framework for financial reporting, relevant IASs and IFRSs.

ACC 409: PUBLIC SECTOR ACCOUNTING & FINANCE (3 Units)

Provisions on revenue, revenue allocation and public expenditure (Federal, State and Local Public Sector, the provision of the Finance (Control and Management Act of 1958, as amended, Federal Treasury, introduction to public sector accounting: distinctions between public and private sector; basic characteristics of government accounting; Legal bases and structure of government accounting in Nigeria; The constitution and regulatory framework of public sector accounting which include the constitutional ccounting Manual, Fiscal Responsibility Act 2010; Cash and Accruals basis accounting in the public Sector; Planning and Budgeting in Public Sector which includes Medium-Term Expenditure Framework, Objective and uses of Annual budget in the public sector, different types of budgeting such as Line-item budgeting system, traditional budgeting, PPBS, PBS and ZBB; budgeting process and budgetary control; Project Appraisal in the public sector and the techniques; Public sector Audit in line with relevant standards such as International standards of Supreme Audit Institutions (ISSAI), IPSAS; the economic environment and role of public sector which includes the objective of fiscal responsibility, main source of revenue and capital finance (Federation Accounts Revenue and Federal Public Sector Independent Revenue), roles of revenue collection agencies such as NNPC, FIRS, SBIRS, DPR and Nigerian Customs service (NCS); roles of Federation Accounts Allocation Committee (composition and functions, bases of revenue allocation); Public debts and debt management strategies. Applicable standards are IPSAS 1-20, 25-32, IAS1,2,7,8,10,11,14,16,17,18,21,23,27, 28, 29,31,32,37,38,39,40, IFRS and other relevant regulations.

ACC 410: CASE STUDIES IN ACCOUNTING (3 Units)

This is an integrated approach to subject matter bringing together and synthesizing streams of knowledge and skills into assessment approach. The approach embraces competences that are not generally tested in individual exam papers. The case study and seminar presentations will also present students with more information than in a conventional exam question and in an unstructured way that requires a process of familiarization, analysis and evaluation. Events and issues are to be put into context in such a way that judgement would be made and communicated to a third party or more senior member of staff.The course contents will include testing of candidate's competence using analysis of basic set of financial statements; ethics components; scenario and requirements (setting a price for a product; valuing a business; analyzing cost; break-even analysis; cash flow analysis; setting key performance indicators;

sensitivity analysis; strategic analysis, efficiency, economy and effectiveness analysis).The case study requirements are relatively open and there is no single solution or model answer that students are required to achieve.

ACC 411: SEMINAR I **(1 Unit)**

Candidates are expected to present seminar papers on any area of Accounting.

ACC 412: SEMINAR II **(1 Unit)**

Candidates are expected to present seminar papers on any area of Accounting.

ACC 499: RESEARCH PROJECT **(6 Units)**

A systematic field research on current accounting issue approved by a supervisor and the department. An original report of reasonable and acceptable length and quality is required to be submitted to the Department at the end of the programme. The project work comprises an original study of a current accounting and management problem.

DEPARTMENT OF BANKING AND FINANCE

Philosophy

The B.Sc. degree programme in Banking and Finance is rooted in the understanding that in an increasingly sophisticated and globalised economy, the financial professional or expert should be well grounded in the concepts and theories of finance that are required for dealing with complex financial and economic issues in a manner that enhances the quality of financial decisions at the various strata of society- Government, Corporate and Individual.

The programme incorporates the virtues of self-reliance and ethical business conduct which are necessary for entrepreneurial/ national development and in preserving the integrity of financial services.

Objectives

i. To produce graduates imbued with the skills and knowledge required to make them capable of excelling as professionals and future leaders in finance and general management positions in global business, industry, commerce and public services.

ii. To prepare graduates for both professional examinations and graduate studies in this and any other University in the world.

iii. To produce graduates who are good team players as well as self-reliant and capable of building successful enterprises.

Academic Staff

Name	Qualification	Area of Specialization	Designation
J. A. Ajayi	B.Sc (Ado-Ekiti), M.Sc. (Lagos), MBA (Ekpoma),Ph.D. (Uturu	Capital Market, International Banking and Finance	Lecturer I and Coordinator
O. Fapetu	B.Sc, M.Sc (Ado-Ekiti), Ph.D. (Lokoja)	International Finance, Comparative Banking .	Senior Lecturer
Oluwatosin. J. Oyetayo	B.Sc. (Zaria),M.Sc. (Calabar), Ph.D. (Benin),	Development Finance	Lecturer I
S. A. Oshadare	B.Sc (Benin),M.Sc (Lagos) MBA, B.Sc (Ojo)NCE(Ijanikin), FCIB, MCIB, ACA, ACIPM, AMNIM	Banking Operations Small Scale Business Finance	Lecturer II
S. D. Owoeye	B.Sc., M.Sc.(Ado-Ekiti)	Corporate Finance, International Finance	Lecturer II

100 Level: First Semester

Course Code	Course Title	U	L	T	P
CMS 101	Mathematics for Management Sciences 1	3	2	1	-
ACC 101	Principles of Accounting and Reporting 1	3	2	1	-
BAM 101	Introduction to Business 1	3	2	1	-
ECO 101	Introduction to Microeconomics	3	2	1	-
BFN 101	Introduction to Finance	3	2	1	-
ETS 101	Entrepreneurial Studies	2	2	-	-
GNS 101	Use of English	2	2	-	-
GNS 105	Introduction to Logic and Philosophy	2	2	--	--
Total		**21**	**18**	**4**	

100 Level: Second Semester

Course Code	Course Title	U	L	T	P
BFN 102	Introduction to Money and of Banking	3	2	1	-
ACC 102	Principles of Accounting and Reporting II	3	2	1	-
BAM 102	Introduction to Business II	3	2	1	-
ECO 102	Introduction to Macroeconomics	3	2	1	-
CMS 102	Mathematics for Mgt. Sciences II	3	2	1	-
CMS 104	Introduction to Computer	3	2	1	
GNS 102	Introduction to Nigerian History	1	1	-	-
GNS 104	History and Philosophy of Science	2	2		-
GNS 106	Introduction to Sociology	2	2		-
Total		**23**	**17**	**6**	

200 Level: First Semester

Course Code	Course Title	U	L	T	P
BAM 215	Business Communication Skills	2	2	-	-
BFN 203	Introduction to Insurance	2	2	-	-
BFN 205	Business Law	3	2	1	-
BFN 207	Mathematics for Finance	2	2	-	-
ACC 201	Financial Accounting and Reporting I	3	2	1	-
ACC 203	Cost Accounting I	3	2	1	-
ECO 251	Principles of Microeconomics	2	2	-	-
ECO 253	Principles of Macroeconomics	2	2	-	-
CMS 201	Statistics for Management Sciences 1	3	2	1	-
GNS 203	Use of Library	1	1	-	-
GNS 201	Writing and Literary Appreciation	1	2	-	-
Total		**24**	**21**	**4**	

*Direct Entry Students to register for GNS 101 & GNS 105 to make minimum Total Units = 26

200 Level: Second Semester

Course Code	Course Title	U	L	T	P
ACC 202	Financial Accounting & Reporting II	3	2	1	-
BFN 202	Principles of Bank Management	3	2	-	-
CMS 204	Application of Computer	3	2	1	-
GNS 202	Elements of Government	3	2	1	
ECO 252	Principles of Macroeconomics II	2	2	-	-
BFN 206	Introduction to Development Finance	2	2	-	-
ETS 206	Entrepreneurship and Change Management	2	2	-	-
CMS 202	Statistics for Management Sciences II	3	2	1	-
	Total (minimum expected)	**23**	**16**	**4**	
	Elective: minimum of one course				
BFN 208	Pension Scheme Administration	2	2		

*Direct Entry Students to register for GNS 102 & GNS 106 to make minimum Total Units = 24

300 Level: First Semester

Course Code	Course Title	U	L	T	P
BFN 301	Investment Banking	2	2	-	-
BFN 305	Nigerian Financial System I	2	2	--	-
BFN 307	Comparative Banking	3	2	1	-
BFN 309	Practice of Banking	3	2	1	-
BFN 311	Monetary Theory and Policy	3	2	-	-
BFN 313	Agricultural Finance	3	2	1	-
BFN 315	Microfinance Banking	2	2	-	-
BFN 317	Management of Financial Institution	3	2	1	-
Total		**21**	**16**	**4**	

300 Level: Second Semester

Course Code	Course Title	U	L	T	P
BFN 302	Bank Audit and Inspection	3	2	1	-
BFN 304	Business Finance	3	2	1	-
BFN 306	Nigerian Financial System II	2	2	--	-
BFN 308	Banking Laws and Regulations	3	2	1	-
BFN 316	Banking Methods and Process	3	2	1	-
BFN 312	Public Sector Finance	2	2	-	-
BFN 318	Financial Management	3	2	1	-
BFN 320	Research Methods in Finance	3	2	1	-
Total		**22**	**18**	**6**	