

**STUDENT HANDBOOK  
FOR DEGREE PROGRAMME**



**IN**

**DEPARTMENT OF ENVIRONMENTAL  
RESOURCE MANAGEMENT (ERM)  
FACULTY OF ENVIRONMENTAL SCIENCES  
UNIVERSITY OF CALABAR,  
CALABAR, NIGERIA**

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## NON TEACHING STAFF

S/N	NAME	QUALIFICATION	DESIGNATION
1	GODWIN MARK ETUK	NCE-PHYSICS/CHEMISTRY B.SC. (ED) PHYSICS	ASSISTANT CHIEF EXECUTIVE OFFICER
2	OHENHEN I. EVELYN	B.Sc. MATHS EDUCATION	SENIOR EXECUTIVE OFFICER
3	MR. DONATUS ENANG EWON	FSLC, GCE/OL, DIP. SOCIAL WORK (BSW)	HIGHER EXECUTIVE OFFICER
4	AKPAN FAITH NATHANIEL	FSLC, WAEC, DIP. COMPUTER	COMPUTER OPERATOR II
5	MR. EGBULA JOHN ELE	OND, ENVIRONMENTAL MANAGEMENT TECHNOLOGY	ASST. TECH. OFFICER II

## PREFACE

The Department of Environmental Resource Management (ERM) is positioned to provide knowledge, skills tools and awareness pertaining to environmental sustainability and human environment interactions in order to improve and maintain the function of environmental systems and protect human health. The Environmental Resource Management programme has been on for the past twenty years but as a unit under the Department of Geography and Environmental Science. However, the emergence of the Faculty of Environmental Sciences in the University of Calabar, brought about the transition of the unit into a full-fledged Department and subsequent appointment of an Acting Head of Department to run the day to day administration of the Department.

Environmental Resource Management focuses on environmental issues and expands from the lower atmospheric boundary to the lower depth of circulating groundwater, which includes vegetation, urban infrastructure, soil, sediments, vadose and saturated zones. The research and degree programmes are grounded in a strong basic science and studies in environment.

A cross section of our students have built capacity to address emerging environmental issues of local to global significance, including climate change, contaminant remediation, and the sustainable management of land and water resources. This first edition of the ERM handbook in the Department of Environmental Resource Management is intended to serve as a guide to students, staff and general public, who are interested in familiarizing themselves with the B.Sc. programme in Environmental Resource Management of University of Calabar, Calabar. The handbook provides detailed information on the programme philosophy, objectives, entry qualifications, degree requirements course structure and contents.

Students are particularly advised to avail themselves with information in the handbook in order to be acquainted with the basic requirements of the programme. Finally, I appreciate my colleagues who stood by me to ensure that the programme handbook is up scaled to the present standard.

**Dr. Devalsam Imoke Eni**

Ag. Head of Department

October, 2018

## HISTORY OF THE PROGRAMME

The B.Sc programme in Environmental Resource Management (ERM) came into existence in response to global, regional and local concerns about the wanton exploitation of the earth's resources and the subsequent destruction of the environment. The ERM programme was established under the headship of Dr. A. E. Ntukidem in August, 1998, with Mr. I. A. Animashaun serving briefly as the programme's first co-ordinator. Since then, the programme has been handled by the following heads and coordinators:

Period	Head of Department	Co-ordinator of Programme
1998-1998	Dr. A. E. Ntukidem	Mr. I. A. Animashaun
1998 - 2000	Engr. E. U. Esin	Dr. E. J. Aniah
2000 – 2003	Prof. M. O. Ebong	Mr. I. A. Animashaun
2003 – 2005	Dr. I. J. Ekpoh	Rev. Dr. D. D. Eni
2005 – 2008	Prof. F. E. Bisong	Mr. B. J. Bassej
2008 – 2010	Dr I. A. Animashaun	Dr. (Mrs) Andrew-Essien
Oct. 2010-Jan. 2011	Prof Bassej B. Eze	Dr. (Mrs.) E. E. Andrew-Essien
Jan 2011–2013	Rev. Dr. D. D. Eni	Dr. A. O. Ajake
2013- March, 2015	Dr. A. O. Ajake	Dr. (Mrs.) Joy E. Atu
March, 2015-Jan, 2017	Assoc. Prof. F. I. Okpiliya	Dr. I. C. Ekwok
Feb. 2017 – present	Assoc. Prof. A. I. Afangideh	Dr. (Mrs.) Violet Eneyo

During the period 1998 to the present, which can be considered as the formative era, the programme has witnessed rapid growth in student numbers with enrolment exceeding 300 students per session. There has also emerged a number of scholarly publications. The strength of the programme derives from the large pool of intending scholars within the University of Calabar catchment area, who are interested in the Earth's environment. Yearly, applications in excess of two thousand seeking placement in the programme are received. The most promising environmental candidates are selected through a process, which includes an aptitude test. Another strength of the programme is the multi-disciplinary approach of study in which students are exposed to theoretical and practical courses not only in Environmental Resource Management, but also in allied departments such as Chemistry, Physics, Computer Science, Microbiology, Mathematics, Geology, Oceanography, Agriculture, Sociology, Economics and Political Science. Within its short period of existence, the ERM programme has contributed to nation building by graduating several

## INTER-FACULTY/INTER-DEPARTMENTAL TEACHING STAFF

S/N	NAME	SPECILAIZATION	DEPT	QUAL.	RANKS
1	PROF. A. OBIEKEZIE	MARINE BIOLOGY	OCEANOGRAPHY	B.SC, Ph.D	PROFESSOR
2	PROF. U. AMALU	SOIL STUDIES	SOIL SCIENCE	B.SC, M.SC, Ph.D	PROFESSOR
3	PROF. M.U. ONU	ACOUSTICS/COMMUNICATION	PHYSICS	M.Phil., Ph.D	PROFESSOR
4	PROF. ABANG	ENVIRONMENTAL ECONOMICS	AGRIC. ECONS	B.SC, M.SC, Ph.D	PROFESSOR
5	DR. AKPANIDIOK	SOIL CLASSIFICATION & POLLUTION	SOIL SCIENCE	B.SC, M.SC, Ph.D	ASSOCIATE PROFESSOR
6	PROF. N. E. ESSIEN	ENVIRONMENTAL GEOLOGY	GEOLOGY	B.SC, M.SC, Ph.D	PROFESSOR
7	PROF. (MRS) N. BISONG	GENDER ISSUES IN ENVIRONMENT	EDUCATION	B.SC, M.SC, Ph.D	PROFESSOR
8	PROF. OGOGO	WILDLIFE CONSERVATION	FORESTRY	B.SC, M.SC, Ph.D	PROFESSOR
9	DR. SHIYAM	ECO-TOURISM	FORESTRY	B.SC, M.SC	ASSOCIATE PROFESSOR
10	DR. ODOK	BIODIVERSITY CONSERVATION	AGRICULTURE	B.Sc., M.Sc., Ph.D	ASSOCIATE PROFESSOR
11	DR. ASIKONG, E.	ENVIRONMENTAL MICROBIOLOGY	MICROBIOLOGY	B.SC, M.SC, Ph.D	ASSOCIATE PROFESSOR
12	DR. (BARR.) VICTOR OFFIONG	ENVIRONMENTAL LAW	LAW	LLB, B.Sc., M.Sc, Ph.D	SENIOR LECTURER
13	MR. GEORGE	AGRO-FORESTRY	AGRICULTURE	B.SC, M.SC	LECTURER I
14	DR. MRS. UGBE	POLLUTION/ LANDLAW	LAW	LLB,	ASSOCIATE PROFESSOR

11	MR. DIGHA , OPAMINOLA N. B.Sc. (PORT HARCOURT), M.Sc. (ABIA), Ph.D (IN PROGRESS)	LECTURER II	ENVIRONMENTAL MANAGEMENT
12	MR. IGELLE EVARISTUS IDAGA B.Sc. (CALABAR), M.Sc. (COVENTRY, UK)	ASSISTANT LECTURER	ENVIRONMENTAL MANAGEMENT
13	MRS JOY WILLIAM UNDIS ATSA B.Sc., M.Sc (CALABAR)	ASSISTANT LECTURER	CLIMATE & SOCIETY
14	MR. OKPUTU JOSEPH SIMON B.Sc., M.Sc (CALABAR)	ASSISTANT LECTURER	BIOGEOGRAPHY
15	MR. ABERTIANBE, CHROSTOPHER AKOMAYE B.ENG(FUTMINNA), M.Sc (DURHAN)	ASSISTANT LECTURER	RENEWABLE ENERGY
16	MR. ARIKPO IKPI B.Ed. (CALABAR), M.Sc (FUTY)	ASSISTANT LECTURER	ENVIRONMENTAL MANAGEMENT
17	MR. ONUOHA EDWIN B.Sc., M.Sc (CALABAR)	ASSISTANT LECTURER	BIOGEOGRAPHY
18	MR PETER OJUGBO AGU B.Sc. (CALABAR), M.Sc In Progress	GRADUATE ASSITANT	ENVIRONMENTAL MANAGEMENT

batches of environmental scientists. The programme also has a tradition of students and staff conducting researches which are useful to the society and environment.

The birth of Faculty of Environmental Sciences from the Faculty of Social Sciences in the University of Calabar through the pronouncement of the Vice Chancellor Prof. Zana Akpagu, at Senate meeting brought about the transition of the Environmental Resource Management Unit into a full-fledged department and the subsequent appointment of an Acting Head of Department. Dr. Devalsam Imoke Eni, the pioneer acting Head of Department was appointed on 12<sup>th</sup> October, 2018.

#### **ACADEMIC CONTENT:**

##### **(a) Vision**

The production of excellent research and consistently high quality graduates.

##### **(b) Mission**

To employ intellectual resources in Environmental Resource Management for teaching and production of highly competent graduates.

##### **(c) Philosophy**

To provide liberal education on knowledge of the environment and acquisition of skills for management of the earth's resources through provision of necessary man-power for institutions involved in environmental related problem-solving and society in general.

##### **(d) Objectives**

The principal objective of the degree programme in Environmental Resource Management is to discover, describe, explain and interpret environmental problems, especially in the areas of environmental degradation, environmental pollution, land use, and management of environmental resources.

The specific details of this objective are as follows:

- i) To contribute to liberal education of the university by disseminating environmental knowledge through teaching, oral presentations, field and laboratory work, and scholarly publications.
- ii) To equip students with suitable analytical and technical skills required for tackling environmental problems, focusing

specifically on the linkages that exist between natural and man-made environments.

- iii) To provide undergraduate students with thorough grounding in the discipline of environmental management, thus, meeting the need for professional expertise.
- iv) To respond to the needs of society by applying specialized knowledge and expertise to solving or mitigating local, state, national and global environmental problems.

**(e) ADMISSION REQUIREMENTS**

**i) FOUR YEAR PROGRAMME (UME)**

Candidates must have credit in English Language, mathematics and any two from science and social science subject at the Senior Secondary Certificate Level in addition to fulfilling the University entry requirements of five credits including mathematics and English with any other three subjects from the following: geography, Biology, Chemistry, Physic, Fine Art, Economics, Government, Tourism, Agriculture etc the social science and/or science subjects.

**ii) DIRECT ENTRY: 3 YEAR PROGRAMME**

In addition to the requirements in e(i) above, direct entry applicants who seek admission to pursue a degree in Environmental Resource Management under the 3 year programme, must have passed three subjects at the General Certificate in Education ('A' Level) or the Higher School Certificate Examination or its equivalent. Candidates who possess the NCE, HND/B.Sc in relevant disciplines are also eligible for admission.

**(f) ACADEMIC ATMOSPHERE**

Formal lectures begin in Year One and end in the 4th (final year). Lectures go along with tutorials, and continuous assessment exercises, quiz and term papers. At least two continuous assessment exercises must be done per course per semester. During the third year, students go on Students' Industrial Work Experience Scheme (SIWES) course with relevant establishments. On completion, students are expected to write independent reports on their experiences, while their employers also report on them.

**ACADEMIC STAFF**

S/N	NAME AND QUALIFICATIONS	STATUS AND RANK	SPECIALIZATION
1	Dr. DEVALSAM IMOKE ENI B.Sc., M.Sc., Ph.D (CALABAR)	SENIOR LECTURER	GEOMORPHOLOGY, HYDROLOGY & ENVIRONMENTAL MANAGEMENT
2	PROF. E. J. ANIAH; B.Sc., (MAIDUGURI); M.Sc. (JOS) Ph.D (DURHAM)	PROFESSOR	POPULATION, TOURISM & ENVIRONMENTAL MANAGEMENT
3	PROF. IMO H. EKPOH; B.Sc., M.Sc., (CALABAR); Ph.D (BIRMINGHAM)	PROFESSOR	APPLIED CLIMATOLOGY & ENV. MANAGEMENT
4	DR. (MRS.) ELIZABETH E. ANDREW-ESSIEN B.Sc. (HONS), M.Sc., Ph.D (CALABAR)	ASSOCIATE PROFESSOR	CONSERVATION PLANNING, ECONOMIC GEOGRAPHY; POLITICAL GEOGRAPHY
5	DR. AKINTOYE, OLUYEMI AYORINDE; B.Sc.; M.Sc. (CALABAR) CERT. IN GIS/REMOTE SENSING NAT CENTRE FOR REM. SENSING, (NCRS, JOS), Ph.D (NIGERIA)	SENIOR LECTURER	FORESTRY STUDIES; ENVIRONMENTAL IMPACT ASSESSMENT, INDUSTRIAL GEOGRAPHY, GIS
6	DR. JOEL EFIONG B.Sc., M.Sc., Ph.D, (CALABAR) , M.Sc. (LEICESTER)	SENIOR LECTURER	HYDROLOGY, GEOMORPHOLOGY, GIS & REMOTE SENSING
7	Dr. PETER EREH OKO B.Sc (CALABAR) PGDE (KADUNA) M.Ed, Ph.D (CALABAR)	SENIOR LECTURER	POPULATION AND ENVIRONMENT
8	DR. (MRS.) CHINASA UTTAH B.Sc. (PORT HARCOURT) M.Sc. (UYO) Ph.D (CALABAR)	LECTURER I	GIS/POPULATION & DEVELOPMENT
9	DR. O. O. EGBAI B.Sc. (ESUT), MSc., Ph.D (CALABAR), HND, PGDE	LECTURER II	AGRICULTURAL GEOGRAPHY, LAND RESOURCE EVALUATION & PLANNING
10	DR. UQUETAN, U. IBOR B.ENV (Ed), MPA, M.Sc., Ph.D (CALABAR)	LECTURER II	SOIL GEOGRAPHY & POLLUTION STUDIES & ENVIRONMENTAL MANAGEMENT

## **DEGREE REQUIREMENTS**

In order to obtain a B.Sc. Degree in Environmental Resource Management under the four-year programme, a student must successfully complete courses up to a minimum of 120 credit hours and a maximum of 156 credit hours. At least 90 of these credit hours must be in courses offered by the Department of Environmental Resource Management.

To obtain a B.Sc. degree in Environmental Resource Management under the three year programme, a student must successfully complete courses up to a minimum of 115 credit hours and a maximum of 144 credit hours. At least 81 of these credit hours must be in courses offered in the Department.

## **FIELDWORK AND FINAL YEAR PROJECT**

All students are expected to participate in a weeklong field studies course organized by the Department, and held at different locations around Nigeria each year. The course will normally take place in the between-semester vacation in the student's third year of study. Participants must satisfactorily complete field course assignments and group projects. In the fourth year, students are required to submit a research project based on original field study, data analysis and interpretation. The project is to be typed and bound (at the student's expense) according to the prescribed format.

## **3 YEAR PROGRAMME**

### **DIRECT ENTRY SUMMARY**

<b><u>1st Semester</u></b>		<b><u>2nd Semester</u></b>		
Yr. 2	22	22	=	44
Yr. 3	24	22	=	46
Yr. 4	17	17	=	34
	63	61		124

**4 YEAR PROGRAMME**

**UME**

Yr. 1	22	22	=	44
Yr. 2	22	22	=	44
Yr. 3	20	18	=	38
Yr. 4	17	17	=	34
	81	79		160

**DURATION OF COURSE**

3 YEARS: Three years

4 YEARS: Four years

**Programme Content**

**ERM: 4 - Year Programme (UME)**



**YEAR ONE (100 LEVEL)  
FIRST SEMESTER (UME ONLY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 101	Use of English and Communication skills	Compulsory	2
2	GSS 111	Citizenship Education	.	2
3	GSS 121	Philosophy & Logic	"	2
4	GSS 141	Anti-Corruption Studies	"	2
5	FES 111	Intro. to Env'tal Sc.	"	2
6	ERM 121	Man's Physical Env.	"	2
7	ERM 131	Environmental Perception & Behaviour	"	2
8	ERM 141	Soc. Org. of the Env.	"	2
9	ERM 151	Noise and Environment	"	2
10	ERM 161	Environmental Geology	"	2
11		One elective from the following:		2
	ECS 101	Introduction to Economics		
	MSS 101	Introduction to Business Studies		
	POS 101	Intro. to Pol. Science		
	SOC 101	Intro. to Sociology		
	GLG 101	Physical Geology		
	BIO 101	General Biology I		
	CHM 101	General Chemistry I		
	TOS 101	Fundamentals of Tourism I		
		<b>Total Credit Hours</b>		<b>22</b>

**YEAR ONE (100 LEVEL)  
SECOND SEMESTER (UME ONLY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 102	Use of English and Communication skills II	Compulsory	2
2	GSS 132	Hist. &Philosophy of Sc.	"	2
3	GSS 142	Anti-Corruption Studies II	"	2
4	ERM 112	Man and Env'tal Sc.	"	2
5	ERM 122	Introductory Techniques in Env'tal Science	"	2
6	ERM 132	Spatial Organization of Society	"	2
7	FES 112	Rural and Urban Environment	"	2
8	ERM 152	Farming Systems and Environment	"	2
9	ERM 162	Environmental Physics	"	2
10	ERM 172	Introductory Env'tal Microbiology	"	2
11		One elective from the following:		2
	ECS 102	Intro. to Economics		
	MSS 102	The Nig. Bus. Env.		
	POS 102	Intro. to African Politics		
	SOC 102	Intro. to Psychology		
	GLG 102	Earth History		
	BIO 112	General Biology II		
	CHM 122	General Chemistry II		
	TOS 102	Fundamentals of Tourism II		
		<b>Total Credit Hours</b>		<b>22</b>

Describes methods of prevention of water related disease (methods of water purification), immunization, health education, etc). Carry out practical in water purification.

### REGISTRATION

All students are expected to register at the beginning of every semester. The University Calendar stipulates the period when registration is expected to be completed.

### LATE REGISTRATION

Student who for one reason or the other could not complete their registration within the University stipulated time are further granted a period of grace, called late registration

## YEAR TWO (200 LEVEL) FIRST SEMESTER (UME ONLY)

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 211	Intro. to Computer	Compulsory	2
2	ERM 211	Profile of Nig. Env.	"	2
3	ERM 221	Environmental pollution	"	2
3	ERM 231	Intro. to Landuse Mapping	"	2
4	ERM 241	Environmental Change	"	2
5	ERM 251	Methods of Phys. Res. Inventory	"	2
6	ERM 261	Soil Studies	"	2
7	ERM 271	Pop. Movement & Environment	"	2
8	ERM 281	Intro. to Oceanography	"	2
9	ERM 291	Intro. to Physical Meteorology	"	2
10	FES 211	Introduction to GIS	"	2
11		One elective from the following:		2
	AGR 201	Intro. to Agriculture		
	BOT 241	Introductory Ecology		
	ECS 231	Nigerian Economy		
	TOS 221	Demography		
	SOC 211	Hist. of Soc. Thought		
	POS 201	Nig. Govt. & Politics		
		<b>Total Credit Hours</b>		<b>24</b>

**YEAR TWO (200 LEVEL)  
SECOND SEMESTER (UME ONLY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 212	Computer Applications	Compulsory	2
2	ERM 212	Introductory Cartography & Surveying	"	2
3	ERM 222	Land Resources Eval. & Planning	"	2
4	ERM 232	Methods of Socio -Economic Res. Inventory	"	2
5	ERM 242	Env'tal Impact Ass. (EIA)	"	2
6	ERM 252	Population, Resources & Environment	"	2
7	ERM 262	Industries & Environment	"	2
8	ERM 272	Cultural Determinants of Environmental problems	"	2
9	ERM 282	Coastal Ecology & Mgt.	"	2
10	ERM 292	Environmental Chemistry	"	2
11	FES 212	Statistics for Env't. Science	"	2
12		One elective from the following: AGR 202 Intro. to Pedology & Soil Science AGR 232 Intro. to forestry TOS 242 Land Survey and Site Selection GES 225 Urban Habitat Studies GLG 202 Min. Res. And Env. Geo. Nig. Govt. & Politics		2
		<b>Total Credit Hours</b>		<b>22</b>

local people; integrating local people in conservation planning and management; indigenous knowledge and conservation planning; community – based wild and domesticated species conservation; ecotourism in conservation planning.

**ERM 472 ENVIRONMENTAL EDUCATION**

The development of environmental education as a strategy for changing people's attitude to the environment. Concept and techniques for environmental protection and management. Creating cultural awareness care for the environment.

**ERM 482 TOURISM RESOURCES**

Topics covered in this course include definition of tourism resources, types and importance of tourism resources. Organization, planning and management of tourism resources to produce tourism experience. Public private partnership in tourism resources development; monitoring and evaluation of tourism resources, challenges and prospects.

**ERM 492 OCCUPATIONAL HEALTH AND SAFETY**

The objective here is on concept of occupational health and safety. Occupational health medicine, industrial hygiene, economics, industrial welfare services, physiology and psychology. Makes an assessment of the preventive; curative, rehabilitative and promotive measures of occupational health programmes.

Occupational hazard and disease different hazards and diseases found in a typical industrial, educational/institutional, home and recreation environment. Methods of controlling/minimizing occupational hazards are examined. Occupational and safety laws in Nigeria. Environmental inspection/survey. Presenting a report of factory, homes and school inspection.

the area of specialization that corresponds with the student's research interest. Students are trained in environmental-related empirical research involving data collection and analysis and report writing. The finished piece of work is presented and defended before an external examiner shortly after the final degree examinations.

#### **ERM 442 ECOSYSTEM RESTORATION**

The concern of this course is on types of ecosystems, specifically those that have suffered some form of ecological upset or disequilibrium and the ways of restoring the status of the ecosystems. The nature and scope of degraded ecosystems, structure and types of ecosystems, Types and causes of degradation; (Anthropogenic and natural); measures of restoring the degraded ecosystem with emphasis on – indigenous knowledge system and ethnographic techniques, technological advancement, economic approach, etc. case studies.

#### **ERM 452 ENVIRONMENTAL HAZARDS**

The course focuses on basic concepts in hazards and disasters; classifies and describes different types of disaster, outlines general effects of hazards and how to prepare, prevent and mitigate against the consequences of natural hazards. Natural disasters such as earthquake, landslide, mass wasting, volcanoes, tsunamis, drought, etc. Spatial variability of hazards, human persistence in disaster prone environment and perception of hazards, hazard forecasting and risk assessment, adaptability to hazards, human activities and hazards.

#### **ERM 462 CONSERVATION PLANNING II**

This course is the continuation to Conservation Planning I and focuses on aspects of International framework conservation – the Convention on Biological Diversity (CBD); people and protected areas; protected areas; status of local people in and around protected areas; protected area management and

### **YEAR THREE (300 LEVEL) FIRST SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 301	Entrepreneurship Development I	Compulsory	2
2	ERM 300	Practical Fieldwork	"	2
3	ERM 311	Environmental Economics	"	2
4	ERM 331	Human Ecology	"	2
5	ERM 341	Environmental Law	"	2
6	ERM 351	Valuation of Environmental Problems	"	2
7	ERM 371	Participatory Research Methods	"	2
8	ERM 381	Climate, Society and Environment		2
9	ERM 391	Urbanization & Environment		2
10		One elective from the following:		2
	ERM 310	River Basin Management		
	ERM 320	Eco-tourism		
	ERM 330	Ecology and the Management of the Tropical Rainforest		
		<b>Total Credit Hours</b>		<b>24</b>

### **YEAR THREE (300 LEVEL) SECOND SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GST 302	Entrepreneurship Development II	Compulsory	2
2	ERM 312	Student Industrial Work Experience	"	6
		<b>Total Credit Hours</b>		<b>8</b>

**YEAR FOUR (400 LEVEL)  
FIRST SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	ERM 411	Introduction to Urban Planning & Practice	Compulsory	2
2	ERM 421	Philosophy & Methodology of Environmental Sc.	"	2
3	ERM 431	Research Project I	"	3
4	ERM 441	Env. & Human Health	"	2
5	ERM 451	Regional Development in Petroleum Producing Env.	"	2
6	ERM 461	Tourism Impact Assessment	"	2
7	ERM 471	Conservation Planning I	"	2
8		One elective from the following:		2
	ERM 410	Environmental Auditing		
	ERM 481	Agricultural & Environmental Sustainability		
	ERM 491	Environmental Hydrology		
		<b>Total Credit Hours</b>		<b>17</b>

systems are reviewed. Agricultural transformation in developing economies. Indigenous knowledge system in developing countries agriculture. It also evaluates conventional and alternative farming methods from a long term perspective taking into account the effect of these practices on the physical and human environment. The peri-urban zone and agriculture, agribusiness. It also looks into the future of agriculture and the future of agricultural geography.

**ERM 491 ENVIRONMENTAL HYDROLOGY**

The focus here is on catchments' hydrology, the hydrological cycle, hydrological processes: precipitation and runoff, infiltration and evapotranspiration, concept of interception, elements of surface and ground water hydrology. Climatic water budgeting/water balance determination.

**ERM 412 SYSTEM THEORY AND THE ENVIRONMENT**

The origin of the system framework of reasoning. The systems approach and its relevance to environmental studies. General system characteristics of system; natural and man-made system. Cybernetics and feedback process in system. Components of general systems. The concept equilibrium. The environment as a system.

**ERM 422 WASTE MANAGEMENT**

The concern focus of this course is on solid waste generation and types. Disposal techniques of urban solid waste, dumping, burying; solid waste recovery, recycling and conservation wastes. To health tubes, sources, and effect of hazardous waste. Control and management of hazardous wastes. Economic and social issues concerning waste generation and disposal.

**ERM 432 RESEARCH PROJECT II**

The research project is an original empirical research undertaken by the student under the supervision of a staff in

### **ERM 461 TOURISM IMPACT ASSESSMENT**

The emphasis here is on positive and negative impacts that tourism activities have on host environments, economies and societies. The course utilizes an interdisciplinary approach to identify and assess these impacts, with emphasis on different impact assessment methods, ways of providing positive solutions and the importance of value systems. Nature and scope of tourism impact assessment, sustainable development and tourism project location, construction and operation. Socio-cultural change and the growth of tourism, economic and environmental traffic congestion and its impacts on the environment. The relationship between transportation and land use patterns in urban areas. Urban transportation – land use models. Case studies.

### **ERM 471 CONSERVATION PLANNING I**

The principal focus of this course is on the framework for conservation planning - approaches to setting priorities, the legal, social, economic and biological context of conservation planning; developing the conservation strategy. Implementing conservation plans - principles and methods for setting conservation priorities; locating assessing and selection of target taxa for conservation; population, species and ecosystem conservation; problems of small and declining population, in situ/ex situ conservation of world populations; ecosystem conservation, protected areas and their selection, protected area management, conservation outside protected areas.

### **ERM 481 AGRICULTURE & ENVIRONMENTAL SUSTAINABILITY**

Topics covered in this course include origin and dispersal of agriculture. The nature of agricultural geography (regional classification and factors of production), the influence of the physical environment on agriculture. Agricultural intensification models (Boserupian thesis). Location and decision making theories of agriculture. Tropical agricultural

### **YEAR FOUR (400 LEVEL) SECOND SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	ERM 412	Systems Theory & the Environment	Compulsory	2
2	ERM 422	Waste Management	"	2
3	ERM 432	Research Project II	"	3
4	ERM 442	Ecosystem Restoration.	"	2
5	ERM 452	Environmental Hazards	"	2
6	ERM 462	Conservation Planning II	"	2
7	ERM 472	Environmental Education	"	2
8		One elective from the following:		2
	ERM 482	Tourism Resources		
	ERM 492	Occupational Health & safety		
		<b>Total Credit Hours</b>		<b>17</b>

**YEAR TWO (200 LEVEL)  
FIRST SEMESTER (DIRECT ENTRY ONLY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 101	Use of Eng. & Comm. Skills	Compulsory	2
2	GSS 111	Citizenship Education	.	2
3	GSS 112	Philosophy & Logic	"	2
4	GSS 211	Intro. to Computer	Compulsory	2
5	ERM 211	Profile of Nig. Env.	"	2
6	ERM 221	Environmental pollution	"	2
6	ERM 231	Intro. to Landuse Mapping	"	2
7	ERM 241	Environmental Change	"	2
8	ERM 251	Methods of Phys. Res. Inventory	"	2
9	ERM 261	Soil Studies	"	2
10	ERM 271	Pop. Movement & Environment	"	2
11	ERM 281	Intro. to Oceanography	"	2
12	ERM 291	Intro. to Physical Meteorology	"	2
13	FES 211	Introduction to GIS	"	2
14		One elective from the following:  AGR 201 Intro. to Agriculture BOT 241 Introductory Ecology ECS 231 Nigerian Economy TOS 221 Demography SOC 211 Hist. of Soc. Thought POS 201 Nig. Govt. & Politics		2
		<b>Total Credit Hours</b>		<b>22</b>

**ERM 431 RESEARCH PROJECT 1**

The research project is an original empirical research undertaken by the student under the supervision of a staff in the area of specialization that corresponds with the student's research interest. The aim of research project is to train students in environmental-related empirical research involving data collection and analysis and report writing.

**ERM 441 ENVIRONMENT AND HUMAN HEALTH**

The focus is on health and the environment. Interplay of food, air and water supply, shelter, diet and nutrition on human health. Ecology of disease. Spatial distribution and seasonality of diseases. Implication of population growth and fertility on health, mortality, environmental pollution and sanitation. Factors in the distribution and utilization of medical and health-care facilities. Introduction to Environmental Health. Introduction to the physical and human environment and the health implications of a contaminated environment, including components of environmental health, environmental health hazards, environmental pollution (air, water and soil); sources, types of pollutants and consequences. Waste water and waste water management techniques. Method of solid waste disposal, housing type and health conditions.

**ERM 451 REGIONAL DEVELOPMENT PLANNING IN PETROLEUM PRODUCING AREAS**

This course is concerned with oil production in the national economy: processes leading to oil spillages; gas flaring and its consequential result; the ecology of the petroleum producing environment; the socio-economic activities; sustainable human resources development approaches in the region; Development of social services; rural-urban linkages in petroleum regions; New Town Development as strategy for revitalizing the petroleum producing rural environment.



urbanization and urban environmental health per capital; subsistence urbanization as a factor in environmental decay, crimes and pathology.

### **ERM 330 ECOLOGY AND MANAGEMENT OF THE TROPICAL RAINFOREST**

Topics covered in this course include the structure and profile of tropical vegetation. Forest resources of the tropics; the significance of forest in the physical and human environmental systems. Biodiversity and conservation of tropical forests. Productivity of tropical vegetation types. The grassland and their ecological and economic significance to the environment.

### **ERM 320 ECOTOURISM**

Definition of eco-tourism, recreation/tourism needs, leisure concepts, demand and supply, tenets of eco-development. Ecological principles/concepts, conservation/preservation. Development of ecotourism potentials: national parks, game reserves, tourist resorts, beaches, etc. Tourism policy.

### **ERM 411 INTRODUCTION TO URBAN PLANNING AND PRACTICE**

Urban planning, theory, theory of urban form; urban design and land use planning; housing development (codes and standards); urban infrastructure, urban circulation planning, urban renewal principles and practices, intervention techniques.

### **ERM 421 PHILOSOPHY AND METHODOLOGY OF ENVIRONMENTAL SCIENCES**

Ethics and philosophy of environmental science. Contemporary techniques and method. The evolution of environmental ideas. Concept and theories in environmental science. The scientific model of explanation. Contribution of environmental science to socio-economic development.

## **YEAR TWO (200 LEVEL) SECOND SEMESTER(DIRECT ENTRY ONLY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 102	Use of Eng. & Comm. Skills	Compulsory	2
2.	GSS 112	Hist. & Philosophy of Science	"	2
3	GSS 212	Computer Applications	"	2
4	ERM 212	Introductory Cartography & Surveying	"	2
5	ERM 222	Land Resources Eval. & Planning	"	2
6	ERM 232	Methods of Socio-Economic Res. Inventory	"	2
7	ERM 242	Env'tal Impact Ass. (EIA)	"	2
8	ERM 252	Population, Resources & Environment	"	2
9	ERM 262	Industries & Environment	"	2
10	ERM 272	Cultural Determinants of Environmental problems	"	2
11	ERM 282	Coastal Ecology & Mgt.	"	2
12	ERM 292	Environmental Chemistry	"	2
13	FES 212	Statistics for Env't. Science	"	2
14		One elective from the following:  AGR 202 Intro. to Pedology & Soil Science AGR 232 Intro. to forestry TOS 242 Land Survey and Site Selection GES 225 Urban Habitat Studies GLG 202 Min. Res. And Env. Geo.		2
		<b>Total Credit Hours</b>		<b>26</b>

**YEAR THREE (300 LEVEL)  
FIRST SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GSS 301	Entrepreneurship Development I	Compulsory	2
2	ERM 300	Practical Fieldwork	.	2
3	ERM 311	Environmental Economics	"	2
4	ERM 321	Statistics for Environmental Scientist	"	2
5	ERM 331	Human Ecology	"	2
6	ERM 341	Environmental Law	"	2
7	ERM 351	Valuation of Environmental Problems	"	2
8	ERM 361	Remote Sensing and Geographic Information System (GIS)	"	2
9	ERM 371	Participatory Research Methods	"	2
10	ERM 381	Climate, Society and Environment		
11	ERM 391	Urbanization & Environment		
12		One elective from the following:		2
	ERM 310	River Basin Management		
	ERM 320	Eco-tourism		
	ERM 330	Ecology and the Management of the Tropical Rainforest		
		<b>Total Credit Hours</b>		<b>20</b>

**YEAR THREE (300 LEVEL)  
SECOND SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	GST 302	Entrepreneurship Development II	Compulsory	2
2	ERM 312	Student Industrial Work Experience	.	6
		<b>Total Credit Hours</b>		<b>8</b>

environmental studies. Segment, point, raster GIS operational systems and subsystems. Data structures and acquisition sub-systems, database management (DBM), data presentation, data structure. Primary and secondary spatial data sources for GIS: Data input methods. Thematic and temporal data. Basic data entities, spatial referencing/Geo-referencing, rasterization, interpolation, statistics. Spatial data modeling and decision making. Output presentation, application, and softwares.

**ERM 371 PARTICIPATORY RESEARCH METHODS (PRM)**

The focus of this course is on basic concepts and principles. Direct observations; semi-structured interviews; participatory mapping and modeling; transect; time trends, etc. Optimal ignorance and triangulation. Applications of PRM in the following areas; analysis of agro-ecosystem forest management; production system; emergencies, disasters and impact assessment, socio-economic issues, etc.

**ERM 381 CLIMATE, SOCIETY AND ENVIRONMENT**

The focus here is on conceptualizing climate, society and environment. Climate-environment interaction. Climate as a resource, environment and society; ethics and obstacles to sustainability, climate and environmental components agriculture, water supply, energy, settlement, transportation and health. Climate and landscape change-urban effects on agriculture.

**ERM 391 URBANIZATION AND ENVIRONMENT**

Topics covered in this course include definition of urbanization, processes of urbanization; positive and negative impacts of industrialization on urbanization and their effects on the urban environment; overcrowding of persons and houses in urban space and the consequences on urban environmental quality. Over-urbanization and pollution of the environment. The consequential effects of urban population explosion on infrastructure and the issue of urban services; hypertrophic

### ERM 360 AGRICULTURAL ECOLOGY OF THE TROPICS

This course focuses on agricultural potentials of the tropical environment, ecological characteristics of tropic agriculture. Agriculture and natural resources management and conservation, indigenous system of tropical agriculture; biotechnology and environment; skills, pest control techniques; food processing and storage technologies, etc and their implications for the environment.

### ERM 310 RIVER BASIN MANAGEMENT

The drainage basin as an environmental unit. Drainage basin characteristics; topography, vegetation, soil, etc. Drainage network analysis, order, shape, length, bifurcation ratio, drainage density.

Drainage basin processes and their measurement; precipitation, infiltration, run-off, sediment etc. Human aspect of the drainage basin; politics, land use, social and economic development, etc. Watershed and watershed protection.

### ERM 302 STUDENT INDUSTRIAL WORK EXPERIENCE

This programme is meant to equip the student with employability skills. The student is to identify an outfit for the exercise which last a whole semester.

### ERM 361 REMOTE SENSING & GEOGRAPHIC INFORMATION SYSTEM (GIS)

An introduction to geospatial information technology and the use of computers in geographical data processing, display and utilization. Basic features of different categories of computer. Introduction to Programme writing; word processing for document preparation; spread sheet activities for spread sheet analysis; database management systems for record storage and organization; worldwide web (internet) browsing for literature search/research; introduction to geographical information systems (GIS)' definition and principles, areas of application in geographical and

### YEAR FOUR (400 LEVEL) FIRST SEMESTER (UME & DIRECT ENTRY)

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	ERM 411	Introduction to Urban Planning & Practice	Compulsory	2
2	ERM 421	Philosophy & Methodology of Environmental Sc.	"	2
3	ERM 431	Research Project I	"	3
4	ERM 441	Env. & Human Health	"	2
5	ERM 451	Regional Development in Petroleum Producing Env.	"	2
6	ERM 461	Tourism Impact Assessment	"	2
7	ERM 471	Conservation Planning I	"	2
8		One elective from the following:  ERM 410 Environmental Auditing ERM 481 Agricultural & Environmental Sustainability ERM 491 Environmental Hydrology		2
		<b>Total Credit Hours</b>		<b>17</b>

**YEAR FOUR (400 LEVEL)  
SECOND SEMESTER (UME & DIRECT ENTRY)**

S/N	COURSE CODE/NO	COURSE TITLE	COURSE STATUS	CREDIT HRS/UNIT
1	ERM 412	Systems Theory & the Environment	Compulsory	2
2	ERM 422	Waste Management	"	2
3	ERM 432	Research Project II	"	3
4	ERM 442	Ecosystem Restoration.	"	2
5	ERM 452	Environmental Hazards	"	2
6	ERM 462	Conservation Planning II	"	2
7	ERM 472	Environmental Education	"	2
8		One elective from the following:		2
	ERM 482	Tourism Resources		
	ERM 492	Occupational Health & safety		
		<b>Total Credit Hours</b>		<b>17</b>

**ERM 341 ENVIRONMENTAL LAW**

Topics covered in this course include background to environmental law; international law and the environment development types and analysis, environmental laws in Nigeria; international and local laws related to the land, sea, air, nuclear test, biological weapons, industrialization, toxic waste, etc. The experiences of developed and developing countries e.g. practice of environmental law in Britain and U.S.A., The Third World with special reference to Nigeria. Environmental law and justice: case studies.

**ERM 351: VALUATION OF ENVIRONMENTAL PROBLEMS**

Topics covered in this course include cost project and analysis of environmental problem. Appraising the economic impact of environmental degradation by type. Problems involved in assigning cost to environmental pollution and distribution of externalities. Effectiveness of using cost approaches to manage environmental problems. Limitation of non-renewable resources on the environment.

**ERM 350 MAN AND THE BIOSPHERIC SYSTEMS**

Detailed study of carbon, nitrogen, phosphorus and sulfur cycles. Human activities/actions that stimulate, enhance, perturb or attenuate the cycles.

**ERM 340 ENVIRONMENTALISM**

Topics covered in this course include background to environmental law; international law and the environment development types and analysis, environmental laws in Nigeria; international and local laws related to the land, sea, air, nuclear test, biological weapons, industrialization, toxic waste, etc. The experiences of developed and developing countries e.g. practice of environmental law in Britain and U.S.A., The Third World with special reference to Nigeria. Environmental law and justice: case studies.

## **ERM 282 COASTAL ECOLOGY AND MANAGEMENT**

An introductory course to coastal ecology. Topics covered include definition of the subject matter of coastal ecology; principles, spatial scale and heterogeneity; characterization of the littoral, flora and fauna, the mangrove ecosystem fishery resources; nutrient cycling within the coastal zone; pollution and coastal ecosystems, coastal ecology and man.

## **ERM 311 ENVIRONMENTAL ECONOMICS**

The course covers topics such as definition, scope of environmental economics, recent issues and concerns on the environment, environmental regulation, measuring the cost of industrial and agricultural pollutant and garbage. Accounting for externalities in production, limitation of environmental economics.

## **ERM 321 STATISTICS FOR ENVIRONMENTAL SCIENTIST**

The concern of this course is on meaning of statistics: The relevance of statistics; data collection and levels of measurement, frequency distribution; histogram, gives and polygons. Measures of central tendency and deviation, sampling techniques, analysis of point pattern; nearest neighbourhood and quadrat analysis. Chi-square ( $\chi^2$ ), analysis of variance, simple and multiple correlation and regression, time series.

## **ERM 331 HUMAN ECOLOGY**

The focus of this course is on human ecology as an intellectual tradition, its origin and applications, concept and models of human ecology in the analysis of man-nature relationships. The integrative nature and major components of human ecology, raw materials, mechanism of organization, adaptation and human ecology as a strategy for an approach to environmental resources management. Resources use in an ecological framework, adaptation pattern of the social structure to natural resources conditions.

## **COURSE CONTENTS**

### **ERM 111 INTRODUCTION TO ENVIRONMENTAL SCIENCE**

An introduction to energy systems in the atmosphere, biosphere, hydrosphere lithosphere, current environmental issues; air pollution, erosion, drought, earthquakes, hurricanes, floods and other hazards. Approaches to environmental sciences; theory and practice: achievement and prospects. The significance of environmental science as field of study.

### **ERM 121 MAN'S PHYSICAL ENVIRONMENT**

This course considers the composition and structure of the lithosphere, atmosphere and hydrosphere. Nature, distribution, evolution and significance of the first order relief form of the earth. The earth's radiation, atmospheric and oceanic circulation systems. Introduction to the cycling of matter and energy in ecosystem.

### **ERM 131 ENVIRONMENTAL PERCEPTION AND BEHAVIOUR**

This course focuses on studies of the perceived environment; the role of human attitudes and evaluation of the way in which "known world"; is perceived. Types of environment: absolute/relative space. Mental map, spatial scheme. Perception of environmental hazards. Eliciting images via personal construct theory: cognitive behaviourism and environmental psychology. Behaviour approaches to environment studies such as semantic differential and repertory grid. Sense of place and spatial planning.

### **ERM 141 SOCIAL ORGANIZATION OF THE ENVIRONMENT**

An introduction to society and culture, social institution and the environment, society: their evolution, customs, traditions, norms values, belief, etc. Major social institutions in contemporary Nigeria their interrelationship with the biophysical environment. Man's cultural relationship to the environment.

### **ERM 151 NOISE AND THE ENVIRONMENT**

The con of this course is on Measurement of sound: Type of sound fields, controlling sounds: sources-fath-receiver, sound attenuation by barriers, vibration isolation, Noise control measures. Special noise in the environment (infrasound, impulse noise, sopic Boom Nang).Outdoor community Noise: Examples of community noise, transportation noise, aircraft noise, road traffic noise, railway noise, industrial noise, measurement and protection. Speech and hearing: effect of noise on people and animals, noise control laws and ordinances.

### **ERM 161 ENVIRONMENTAL GEOLOGY**

The attention of this course is on Earth's material: mineral and crystals. Physical and chemical properties of minerals. Structuralgeology: simple classification of the earth structure. Economic minerals: ore bodies, classification and origin; criteria for their exploitation. Nature, origin, and exploitation of petroleum and natural gasses in Nigeria, the impact of mineral exploitation on Nigerian environment.

### **ERM 112 MAN AND ENVIRONMENTAL RESOURCES**

The scope of human environment and its relation to physical environment. World population; its distribution, patterns of growth and implication for resources. demographic characteristics of selected populations. Human habitation, environmental resources; the concept of resources, type of resources and their global distribution, relationship between resources and tertiary activities. Impact of human activities on the environment at varying levels of technology and population densities.

### **ERM 122 INTRODUCTORY TECHNIQUES IN ENVIRONMENTAL SCIENCE**

Training is provided in a number of techniques such as sampling methods and the use of the computer Map work and mapping techniques in collecting and recording information.

### **ERM 232 METHODS OF SOCIO-ECONOMIC RESOURCES INVENTORY**

The focus of this course is on collecting and managing information on socioeconomic factors of the environment. Design of socio-economic surveys, using a variety of typical cases to illustrate relevant environmental data and how they may be obtained in the field.

### **ERM 242 ENVIRONMENTAL IMPACT ASSESSMENT**

The concern of this course is on approaches to environmental impact assessment (EIA); comprehensive and integrated assessment; content of the analysis. Methods of choosing units to be analysed. Data for impact assessment, sensitivity analysis. Impact projections; modeling; simulation, statistical analog. Adjustment experiment, empirical case studies.

### **ERM 262 INDUSTRIES AND THE ENVIRONMENT**

The focus of this course is on industrial growth, affluence and high mobility versus environmental health. The industrial and transportation health land scales; basic features and their impact on water, air, land, animal, vegetation and weather. Automobile emission and their effect on heath and other aspects of the environment. Automobile space demand and junk yards. Managing hazardous industrial and transportation wastes and toxic chemicals.

### **ERM 272 CULTURAL DETERMINANTS OF ENVIRONMENTAL PROBLEMS**

The focus here is on social problems and environmental degradation, study of specific environmental problems in socio-cultural context. Environmental problems and problems of resources utilization in the context of related social institution such as economy, communication, development, politics, system of beliefs, rituals, etc. Case study of social problems and environmental degradation in Nigeria.

### **ERM 281 INTRODUCTION TO OCEANOGRAPHY**

This is an introductory course to oceanography. Topics covered include marine environment and marine organisms, current, waves, tides, physical properties of sea water; solar radiation, temperature, salinity, density, pressure, and their biological significance. Marine plankton and primary resources production, marine animals crustacean, cephalopods, reptiles, mammals, sea birds marine fish, fisheries and fisheries oceanography. Benthos and benthic communities; Intertidal environments. Oceanography and coastal zone management. United Nations Convention on the Law of the seas.

### **ERM 291 INTRODUCTORY PHYSICAL METEOROLOGY**

An introductory course to physical metrology. The focus is on development and concepts of Energy; energy from fire, solar, thermal, atomic, radioactive; energy utilization, structure and conservation. The earth's budget, the role of energy in environmental systems.

### **ERM 212 INTRODUCTORY CARTOGRAPHY AND SURVEYING**

An introductory course to cartography and surveying with emphasis on: history of map making techniques; types of maps, drafting techniques and instruments, basic map compilation and design, construction, of physical and economic maps. Basic contour, profile, flow map, pie and bar graphs. Lettering, map scale and map projection techniques, linear and angular measurement, chain surveying, compass surveying, and rectangular co-ordinate system. The theodolite, leveling, transverse and elementary triangulation.

### **ERM 222 LAND RESOURCES EVALUATION & PLANNING**

The course deals with an examination of the nature of land resources, particular emphasis is given to resources in Nigeria and West Africa. The main themes are: methods of resources evaluation, resource utilization and resource conversation. The resources include; mineral resources, biotic, abiotic resources, water and energy resources.

Field surveys of physical and cultural landscapes involving the use of transects, base maps, photographic records, field notebook record, card/punch card. Measuring instrument and equipment or monitoring aspects of the environment .

### **ERM 132 SPATIAL ORGANIZATION OF SOCIETY**

Some basic concepts of spatial organization are considered: principles of spatial interaction, environmental consequences of human spatial interaction. Movement of food, labour, sickness and diseases.

### **ERM 142 RURAL AND URBAN ENVIRONMENT**

The focus of this study is on nature and characteristics of the rural environment. Rural activities, economic and social which have direct or indirect relevance to the physical environment. Rural resources exploitation and the rural environment. Urban habitat as an environment type. The peculiar environmental problems of the urban area including congestion, waste disposal population, slum and squatter residences and their implication on human health and the environment itself.

### **ERM 152 FARMING SYSTEMS AND ENVIRONMENT**

The focus here is on origin and development of farming systems, characterization of farming systems, tropical farming systems and environment, physical environmental factors influencing tropical farming systems, socio-economic factors influencing tropical farming systems; contemporary environmental problems of farming systems; sustainable farming systems.

### **ERM 162 ENVIRONMENTAL PHYSICS**

This course considers the development of energy: energy from fire, solar and terrestrial radiation; thermal energy; atomic radioactive energy. Energy structure, energy and the environmental system. Law of energy use and conservation. The earth's energy budget. The role of energy in environmental physics.

## **ERM 172 INTRODUCTORY ENVIRONMENTAL MICROBIOLOGY**

The focus here is on micro-organisms and their environment: aquatic, terrestrial, serial, influence of environmental factors on microbial activities. Temperature, desecrations. Water treatment processes. Water-related diseases.

## **ERM 211 PROFILE OF THE NIGERIAN ENVIRONMENT**

This course considers Nigeria's physical environment: Structural basins, plains, hills and mountains. The climatic, pedologic and biotic environments. The human environment: the cultural setting; human settlements and the implications of the environment on their pattern and form. House types and the environment. The pattern and impact of economic activities on the Nigerian environment.

## **ERM 221 ENVIRONMENTAL POLLUTION**

The focus here is on major pollutants in the environment, water pollution: types and sources; surface and ground water pollution; ocean and estuarine pollution; effects of water pollution and drinking water safety; water pollution control; air pollution, types and sources; industrial smog formation and acid deposition; photochemical smog particulate matter, etc. Effect of air pollution .Air pollution control measures. Pollution problems in the oil industry and control measures. Eutrophication and agricultural water. The pollution of the urban environment.

## **ERM 231 INTRODUCTION TO LAND-USE MAPPING**

This course is an introduction to land-use type and classification. Principles of land-use mapping. Features and characteristics of land-use data; procedure for land-use data collection. The mapping of human, cultural and physical attitude of land-use.

## **ERM 241 ENVIRONMENTAL CHANGE**

This emphasis of this course is on global environment changes such as: climatic change; ozone depletion, biodiversity loss, acid rain, International river, seas and oceans. Changes in the local environment; soil erosion, deforestation, desertification and drought, Stalinization, soil and hazardous wastes, etc. The

relationship of these topical issues to man, his welfare, poverty, gender technology and public policy.

## **ERM 251 METHODS OF PHYSICAL RESOURCE INVENTORY**

The objective is on the course definitions and relevant concepts. Place of physical inventory in resources management. Inventory tools and processes: field surveys, measurements scale and sampling technique. Place of statistics. Approaches to resource inventory; single subjects and multiple subjects approaches; remote sensing approaches and interpretations. Data analysis, cartographic, statistical, GIS application. Case studies: vegetation inventory, soil and water inventory, weather and climate studies.

## **ERM 252: POPULATION, RESOURCES AND ENVIRONMENT**

Topics covered include population dynamics, resource consumption and environment interactions; theories and models of population dynamics, resources and environment; population and urbanization; carrying capacity and macro-models; population and environmental quality; population and waste generation/disposal; population and forests; agriculture and food security; biodiversity; freshwater resources, energy etc; migration and environmental degradation/resource use conflicts; concept of environmental refugees; the challenges of population growth, poverty, resource depletion and environmental sustainability, etc.

## **ERM 261: SOIL STUDIES**

The focus of this course is on the significance of soil in the environment, soil constituent and properties, soil formation and processes, zonal soils. Zonal soils and intra-zonals. Soil fertility and land-use. Soil degradation process; erosion and leaching and their consequences on the environment.

## **ERM 271: POPULATION MOVEMENT AND ENVIRONMENT**

The emphasis is on nature, significance, scope, principles, types and causes of population movement. (Anthropogenic and natural). Theories and models of population movement. Impacts of population movement on and from the point of origin and destination such as social, political, economic, environmental, agricultural and land use problems, etc. Assessments of population movement complexities in developing countries with emphasis on Nigeria. Displaced persons and environmental refugee's syndrome.