

UNIVERSITY OF NIGERIA, NSUKKA
FACULTY OF THE SOCIAL SCIENCES
DEPARTMENT OF GEOGRAPHY
POSTGRADUATE PROGRAMMES IN GEOGRAPHY

PHILOSOPHY:

The Department offers postgraduate courses leading to the award of Postgraduate Diploma in Environmental Management (PGD), Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D.) degrees in Geography. The philosophy and mission statement underlying the postgraduate programme in Geography is to produce graduates imbued with the ability to contribute to national, regional and global environment and development issues through their understanding of the spatial phenomena and processes that produced them. This is achieved by equipping the students with a broad foundation and specialized knowledge in all areas of Geography.

OBJECTIVES:

The objectives of the PGD Programme are as follows:

1. To inculcate in the students basic training in environmental science, with particular reference to the recognition, retrieval and analysis of environmentally significant data.
2. To provide graduates with professional preparation for work and further studies in the broad field of Geography and other associated applied professions.

The objectives of the M. Sc. Programme are as follows:

- 1 To provide students with a solid theoretical knowledge in their chosen branches of Geography through the delivery of a well-coordinated and balanced degree programme, integrating core Geography courses with practical applications.
- 2 To develop in the students scientific skills in oral, written and graphical communication.
3. To provide students with sufficient materials to explore the subject, to carry out self-organized study, and to think about issues and challenges of acquiring, analyzing and interpreting data.
4. To provide students with a short basis to engage more quickly and effectively with the economics and management expert of earth's references resources.

The objectives of the Ph.D. Programme are as follows:

1. Produce globally competitive graduates equipped to pursue careers in geography as academics, in industry, the public sector and non-government organizations.
2. Foster the acquisition and implementation of broad-based research and analytical skills related to the geographical sources.
3. Develop new areas of teaching through research in response to the advancement in scholarship and the needs of the community including vocational training.
4. Inculcate the attitude and develop the ability of postgraduate students to disseminate their research findings through publications, conferences and workshops.

SCOPE:

The PGD programme is designed to update candidates' practical knowledge to be able to meet the challenges posed by the changing environment. The training aims at improving on the efficiency as well as inspiring the candidates to pursue further studies in Geography and other related disciplines. Thus, in addition to professional training in Environmental Management, the programme also provides broad preparation for the candidates to pursue Master's and Doctorate degrees in the Geography and the Environmental Sciences.

The scope of the M. Sc. and Ph.D. degree programmes provides opportunities for specialization in all areas of Geography, particularly the following: Agricultural Geography, Biogeography, Cartography, Climatology/Physical Oceanography, Environmental Management, Geographic Information Systems, Geomorphology, Hydrology and Water Resources, Industrial Geography, Political Geography, Population Geography, Remote Sensing, Rural Geography, Transportation Geography and Urban Geography.

ADMISSION REQUIREMENTS:**a. PGD Programme**

In addition to satisfying the conditions for admission into the University of Nigeria, candidates applying for the PGD in Environmental Management should hold Bachelors degree or Higher National Diploma (HND) passed at Upper Credit Level in Geography or related disciplines.

b. M.Sc. Programme

In addition to satisfying the conditions for admission into the University of Nigeria, candidates applying for the M. Sc degree in Geography should hold Bachelors degree with a minimum CGPA of 3.0 in Geography, Education/Geography or related disciplines in the Social, Physical, Biological, Agricultural and Environmental Sciences or Engineering etc.

c. Ph.D Programme

In addition to satisfying the conditions for admission into the University of Nigeria, candidates applying for the Ph. D degree in Geography should hold Master's degree with a minimum CGPA of at least 4.0 on a scale of 5.0 in a relevant area of Geography or the related disciplines.

DURATION OF PROGRAMMES

PGD

Maximum and minimum duration of Postgraduate Diploma programme shall be:

Full-Time: A minimum of 2 Semesters
 A maximum of 4 Semesters

M.Sc.

Full-Time: A minimum of 3 Semesters
 A maximum of 5 Semesters

Part-Time: A minimum of 5 Semesters
 A maximum of 8 Semesters

PhD

The minimum duration of programme (or the minimum residential requirement) and maximum duration of the Ph.D. programme shall be:

(a) Duration of Master's/Ph.D programme.

Full-time: 3 Calendar Years minimum; 5 Calendar years maximum.

Part-Time: 4 Calendar years minimum; 6 Calendar years maximum.

(b) Duration of Ph.D programme (After Master's Degree)

Full-Time: 3 Calendar years minimum; 5 Calendar years maximum.

Part-Time: 4 Calendar years minimum; 6 Calendar years maximum.

REQUIREMENTS FOR GRADUATION

PGD Programme

To be awarded the PGD, a student must have taken and passed the prescribed number of required courses (30 units) from the approved list of courses for the programme as follows:

Core courses	26 units
Long Essay	4 units
Total	30 units

In all cases, PGD students must write, submit to the Department and pass a Long Essay duly supervised by an approved lecturer in the Department. Such Long Essay must be sent to an external examiner nominated by the Department and appointed by Senate for that purpose.

M.Sc. Programme

To be awarded the M.Sc. degree, a student must have taken and passed a total of 33 units from the prescribed number of compulsory and required courses selected from the approved list as follows:

Core courses	26 units
Dissertation	6 units
Total	32 units

In all cases, M.Sc. students must write and submit to the Department and pass a dissertation duly supervised by an approved lecturer in the Department. Such a project must be sent to an external examiner nominated by the Department and appointed by Senate for that purpose.

Ph.D. Programme

To graduate, all the Ph.D. candidates must take and pass all the requisite courses, a total of 30 units, as prescribed in the Ph.D course list below:

Core Courses	18 units
Thesis	12 units
Total	30 units

Every Ph.D. candidate must submit and pass a thesis on a chosen and approved topic, supervised by an approved Ph.D supervisor in the Department in line with the regulations of the School of Postgraduate Studies. The Ph.D. thesis must be defended before an external examiner duly nominated for that purpose and appointed by Senate

EMPLOYMENT OPPORTUNITIES

Successful graduates in Geography are equipped for careers in research institutions, tertiary institutions, government parastatals, corporate agencies, military and paramilitary outfits, multinational corporations, development agencies, non-governmental organizations and other public or private companies for works related to the environment such as mapping, public health, geographic information systems, urban planning, rural development and environmental education and in other areas of man-environment interactions.

AREAS OF SPECIALIZATION (M.SC AND PH.D)

- i. Agricultural Geography
- ii. Biogeography
- iii. Cartography
- iv. Climatology/Physical Oceanography
- v. Environmental Management
- vi. Geographic Information Systems
- vii. Geomorphology
- viii. Hydrology and Water Resources
- ix. Industrial Geography
- x. Political Geography
- xi. Population Geography
- xii. Remote Sensing
- xiii. Rural Geography
- xiv. Transportation Geography and

xv. Urban Geography

STRESS AREAS

The PGD programme is solely in Environmental Management while the following stress areas are covered in both the M.Sc. and Ph.D. programmes:

Area	Code
General/Methodology Courses	0
Geomorphology	1
Climatology and Physical Oceanography	2
Hydrology and Water Resources/Biogeography	3
Cartography/Remote Sensing	4
GIS/Environmental Management	5
Rural/Agricultural/Urban Geography	6
Industrial/Transport Geography	7
Population/Political Geography	8
Projects	9

LIST OF APPROVED SUPERVISORS

In line with the regulations of the University’s School of Postgraduate Studies (SPGS) on the minimum requirements for postgraduate supervision, the table below shows the list of approved postgraduate supervisors in the Department and their major areas of specialization. The nominal specializations notwithstanding, the academic staff have researched and published extensively and demonstrate strong competences in the stress areas the Department offers.

LIST OF APPROVED POSTGRADUATE SUPERVISORS

S/N	Names	Qualifications	Rank	Field of specialization
1.	Prof. P. O. Phil-Eze	B.Sc, M.Sc, Ph.D,	Professor	Biogeography & Environmental Management
2.	Prof. I. A. Madu	B.Sc, M.Sc, PGDE, Ph.D,	Professor	Rural Geography
3.	Dr. M. C. Obeta	B.Sc, M.Sc, Ph.D	Senior Lecturer	Hydrology & Water Resources
4.	Dr. T. C. Nzeadibe	B.Sc, M.Sc, Ph.D	Snr. Lecturer	Environmental Management
5.	Dr. H.C. Nnamchi	B.Sc, M.Sc, Sc.D	Snr. Lecturer	Climatology & Physical Oceanography
6.	Dr. C.K. Ajaero	B.Sc, M.Sc, Ph.D	Snr. Lecturer	Population Geography

PROGRAMME STRUCTURE

PGD Programme

Course No.	Title	Units
First Semester		
DEM 0511	Introduction to Environmental Systems	3
DEM 0521	Environment, Energy and Development	3
DEM 0531	Environmental Hazards and Disasters	3
DEM 0541	Environmental Surveying and Mapping	3
DEM 0561	Basics of Environmental Change	3
DEM 0571	Pollution and Pollutants	3
CED 341	Introduction to Entrepreneurship	2

DEM 0501	Research Methodology and Seminar	3
TOTAL		23

Second Semester

DEM 0532	Environmental Degradation and Restoration	3
DEM 0542	Air Photographs & Satellite Remote Sensing	3
DEM 0552	Environmental Impact Assessment	3
DEM 0554	Environmental Problems in Nigeria	3
CED 342	Business Development & Management	2
DEM 0592	Project	4
TOTAL		18

Course No.	Course Description	Units
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DEM 0501	Research Methodology and Seminar	3
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Formulation of research problem. Scientific hypothesis. Literature sources and survey. Qualitative and quantitative research methods. Project structure and presentation. Research proposal seminar. Written presentation by individual students and discussion of PGD research proposal

DEM 0511	Introduction to Environmental Systems	3
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The Biosphere, Ecological Concepts: Energy source, consumers, producers, biotopes, biocenosis, biodiversity. The Physical Environment: habitat, cycle, niche, entropy, global change. The Human Environment: settlements, cities, mining, agricultural activities, Industries.

DEM 0521	Environment, Energy and Development	3
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Solar and terrestrial radiation. Energy transfers: atmosphere, water cycle. The biogeochemical cycles: carbon , nitrogen. Ecosystem dynamics, stress, collapse. Consumption of fossil energy, oil, coal, gas.

DEM 0531 Environmental Hazards and Disasters 3

Natural hazards. Nature, causes and effects of: soil, coastal erosion. drought. floods. Fossil: riverine and urban. Tropical cyclones and storms. Earthquakes and landslides. Volcanic eruptions.

DEM 0532 Environmental Degradation and Restoration 3

Man induced changes in the environment. Soil degradation and erosion control measures. Desertification, shelter-belts and afforestation. Forest fires. Urban slums and amelioration. Regulated rivers and downstream effects. Endangered species and wildlife conservation. Environmental effects of mining and industrialization.

DEM 0541 Environmental Surveying and Mapping 3

General and thematic maps. Mapping methods. Map compilation and symbolism. Basic cartography and draughtmanship. Land use and general mapping. Cadastral survey techniques and topographic level ling. Ground-truthing and geo-refrencing using GPS.

DEM 0542 Air Photographs & Satellite Remote Sensing 3

Basic principles of aerial photography. Photo interpretation. Electromagnetic radiation. Energy interaction with earth targets. Spectral reflectivity and sensitivity. Different types of sensors and remote sensing systems. Introduction to Geographic Information System (GIS).

DEM 0552 Environmental Impact Assessment 3

Environmental quality. Basic and theoretical concepts in environmental management. Legal and administrative frameworks in environmental management in Nigeria. Development of EIA in the

developed and developing world. The EIA process from inception to final permit. Techniques of Impact Assessment. Baseline data acquisition and analysis. Methods of impact assessment: Qualitative networks, Graphic overlay method, checklist approach, matrix method, etc. Stakeholder involvement in EIA Process. Fieldwork practical in impact evaluation and management plan.

DEM 0554 Environmental Problems in Nigeria 3

Nature of the Nigerian environment. Problems of water, land, noise and air quality. The oil industry and the environment. Urban waste management. Nigerian environmental laws and policies. Measures for environmental awareness and education

DEM 0561 Basics of Environmental Change 3

The concept of environmental change. Ecology of human populations. Population characteristics. Reproductive capacity, birth control: population size. The effects of growing population on environment: Climate change, environmental degradation etc. Mitigation of effects of growing population on environment. Global changes.

DEM 0571 Pollution and Pollutants 3

Conceptual issues: Environment, pollution, pollutants and ecology. Air, water and noise pollution. Oil spillages and their effects. Toxic wastes. Sources and causes of pollution. Basic chemistry of major pollutants. Environmental effects. Natural hazards and their effects on public health.

DEM 0592 PROJECT 4

A project report embodying results of field investigation in any of the aspects of the programme.

CED 341 Introduction To Entrepreneurship 2

Developing Entrepreneurship. Developing Entrepreneurship in an organization. The environment of entrepreneurship in Nigeria. Technological entrepreneurship. Woman entrepreneurship. Social entrepreneurship. Evaluation of business opportunity. Family business. Concept and process of creativity. Innovation and Entrepreneurship. Management of innovation. Intellectual Property Rights

CED 342 Business Development & Management 2

Business growth: An overview. Concept of business and new venture creation. Business environment. Sources of funds. Credit management. Co-operatives. Marketing. Customer loyalty. E-business. Managing transition; From start-up to Growth. Leadership. Time management. Information management. Decision-making process. Business plan.

M.Sc. Programme

A. Core Courses

All candidates MUST register for the courses listed below:

Course No.:	Titles	Units
First Semester		
PGC 601	Research Methodologies and Application of ICT in Research	3
GEO 501	Perspectives on Geographic Theory and Research Methods	3
GEO 503	Computer and Statistical Applications in Geography	3
Second Semester		
GEO 592	Master's Research Seminar	3
GEO 599	Master's Project	6
CED 342	Business Development & Management	2

At least 12 units from the candidate's specialization	12
Total	32

B. M.Sc. SPECIALIZATION

Candidates should register the courses under their areas of specialization as listed below:

M.Sc. GEOMORPHOLOGY

First Semester

GEO 511 Advanced Theories, methods and application in Geomorphology 3

Second Semester

GEO 512 Quantitative Geomorphology 3

3 units to be chosen each from First and Second semesters from the following courses

First Semester

GEO 513 Tropical Geomorphology 3

GEO 515 Fieldwork and laboratory Analysis in Geomorphology 3

GEO 517 Fluvial Geomorphology 3

GEO 519 Applied Geomorphology 3

Second Semester

GEO 514 Climate change and Geomorphological System 3

GEO 516 Soil Erosion and Conservation 3

GEO 518 Land Resource Evaluation and Management 3

GEO 510 Geomorphological Mapping 3

M.Sc. CLIMATOLOGY AND PHYSICAL OCEANOGRAPHY

First Semester

GEO 521	Weather and Climate Dynamics	3
GEO 523	Physical and Applied Climatology	3

Second Semester

GEO 526	Physical Oceanography	3
GEO 522	Numerical Modelling of the Ocean and Atmosphere	3

M.Sc. HYDROLOGY AND WATER RESOURCES

First Semester

GEO 531	Hydrological processes	3
GEO 533	Hydrology of Drainage Basins	3

Second Semester

GEO 532	Water Resources Management	3
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3 units to be chosen from the list below

GEO 534	Applied Hydrology	3
GEO 535	Public Water Supplies	3
GEO 536	Water Pollution Studies	3

M. Sc. BIOGEOGRAPHY

First Semester

GEO 537	Tropical Vegetation and Mapping	4
GEO 539	Biogeography of Soils	4

Second Semester

GEO 538	Tropical Ecosystems	4
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M.Sc. CARTOGRAPHY

First Semester

GEO 541 History of Cartography 3

GEO 543 Theoretical Foundations and Cartographic Research Methods 3

(Electives: 3 units from Remote Sensing/GIS)

Second Semester

GEO 542 Worldwide Geographic System (WGS) 3

GEO 544 Automated Cartography and Digital Applications 3

M.Sc. REMOTE SENSING**First Semester**

GEO 545 Remote Sensing Studies 3

GEO 547 Image Analysis and Processing 3

Second Semester

GEO 546 Remote Sensing Systems 3

(Electives: 3 units from Cartography/GIS) 3

M.Sc. GEOGRAPHIC INFORMATION SYSTEMS**First Semester**

GEO 551 Elements of Geographic Information Systems 3

GEO 553 Trends and Applications of GIS 3

Second Semester

GEO 552 Management Issues and GIS Functionalities 3

GEO 554 Spatial Data Structure 3

M. Sc. ENVIRONMENTAL MANAGEMENT

First Semester

GEO 555	Theoretical and Ethical bases of Environmental Management	3
GEO 557	Environmental Pollution, Control and Management	3

Second Semester

GEO 556	Environmental Management and Impact Assessment	3
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3 units to be chosen from the list below:

GEO 558	Environmental Politics and Socioecological Problems in Nigeria	3
GEO 538	Tropical Ecosystems	4
GEO 516	Soil Erosion and Conservation	3
GEO 536	Water Pollution Studies	3

M. Sc. RURAL GEOGRAPHY

First Semester

GEO 561	Rural Development and Planning Problems	4
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4 Units to be chosen from the list below:

GEO 581	Population Geography: Theory and Process	4
GEO 563	Agricultural Geography: Theory and Processes	4

Second Semester

GEO 562	Rural-Urban Interaction	4
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M. Sc. AGRICULTURAL GEOGRAPHY

First Semester

GEO 563 Agricultural Geography: Theory and Processes 4

Second Semester

GEO 564 Models and Analytical Techniques in Agricultural Geography 4

4 units from the list below:

GEO 516 Soil Erosion and Conservation (2nd semester) 3

GEO 561 Rural Development and Planning (1st semester) 4

M. Sc. URBAN GEOGRAPHY

First Semester

GEO 565 Urban Geography: Theory and Process 4

Second Semester

GEO 566 Urban Analytical Techniques and Urban Modelling 4

4 Units to be chosen from the list below:

GEO 568 The Process of Urban and Regional planning 4

GEO 562 Rural-Urban Interaction (2nd semester) 4

GEO 573 Transport and Transit Systems (1st semester) 4

M. Sc. INDUSTRIAL GEOGRAPHY

First Semester

GEO 571 Industrial Geography: Theory and Process 3

GEO 573	Transport and Transit Systems	3
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Second Semester

GEO 572	Industrial Location: Policies and Development	3
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GEO 574	Models and Analytical Techniques in Industrial Geography	3
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M. Sc. TRANSPORTATION GEOGRAPHY

First Semester

GEO 573	Transport and Transit Systems.	3
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GEO 575	Transport Management	3
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Second Semester

GEO 576	Quantitative Methods in Transportation Geography	3
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3 Units to be chosen from the list below:

GEO 577	Urban Transport	3
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GEO 578	Rural Transport	3
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GEO 579	Transport and Tourism	3
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M. Sc. POPULATION GEOGRAPHY

First Semester

GEO 581	Population Geography: Theory and Process	4
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Second Semester

GEO 582	Analytical Techniques and Models in Population Geography	4
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4 Units to be chosen from the list below:

GEO 565	Urban Geography: Theory and Process (1 st semester)	4
GEO 562	Rural-Urban interaction (2 nd semester)	4
GEO 568	The Process of Urban and Regional planning	4

M. Sc. POLITICAL GEOGRAPHY

First Semester

GEO 583	Theories and Issues in Political Geography	4
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Second Semester

GEO 584	Models and Analytical Methods in Political Geography	4
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4 Units to be chosen from the list below:

GEO 561	Rural Development and Planning Problems	4
GEO 558	Environmental Politics and Socioecological Problems in Nigeria	3
GEO 568	The Process of Urban And Regional Planning	4

Course No.	Course Description	Units
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A. General Courses

PGC 601	Research Methodologies and Application of ICT in Research	3
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In-depth research work aimed at acquiring full knowledge and presentations in scholarly writing of the concepts, issues, trends, in the definition and development of the study area from African and Western perspectives. Major steps in research. Selection of problem, Literature review. Design, Data collection, analysis and interpretation. Conclusions. Study of various research designs. Historical. Case studies. Surveys. Descriptive. Cross sectional, Experimental. Etc. Analysis, surveys and synthesis of conceptual and philosophical foundations of different

disciplines and or hypothesis. Identification of research problems and development of research questions and or hypotheses. Detailed treatment of methods of collecting relevant research data and the format for presenting research results (from designing the table of content to referencing. Bibliography and appendix). Data analysis and result presentation in different disciplines using appropriate analytical tools methods of project/dissertation writing. Application of appropriate advanced ICT tools relevant in every discipline for data gathering analysis and result presentation. Essentials of spreadsheets. Internet technology and internet search engines. All registered masters Degree students must attend a solution-based interactive workshop to be organised by the school of Postgraduate studies for a practical demonstration and application of the knowledge acquired from the course conducted by selected experts.

GEO 501 Perspectives on Geographic Theory and Research Methods 3

Formulation and attributes of the geographic problem. Research questions. The formulation of scientific hypothesis in geographic research. Fieldwork. Questionnaire methods. Data collection from published sources. Survey of published data sources in specific areas. Cartographic techniques in the representation of geographic data. Literature sources and literature surveys. Introduction to grant proposal writing. Research ethics and codes of conduct. Practical sessions on conference/seminar presentation skills. Thesis writing: structure and presentation of laws and theories in Geography. The nature of geographical models. Model building in physical and human Geography. Systems and systems analysis

GEO 503 Computer and Statistical Applications in Geography 3

The quantitative and computer revolutions in Geography. The Fortran and other programming languages. The R programming language. Laboratory in Fortran. Laboratory in R. Introduction

role of the I.G.U. Commission on geomorphological survey and mapping: symbols on the geomorphology maps. Types of geomorphological maps. Use of geomorphological maps for development purposes. The production of geomorphological map of given area. Manual and GIS –based approaches of producing geomorphological maps fieldwork and image analysis.

GEO 511 Advanced Theories , Methods and Application in Geomorphology 3

Meaning, nature and scope of Geomorphology from the various schools of Geomorphology. Development of Geomorphology- Ancient, Medieval, Arabian Contributions. Geomorphology in the Renaissance and Classical Periods: German, British, Italian, French, Swiss and American contributions. Development of Geomorphology in modern and contemporary period; Powell, Dutton, Gilbert, Penck, Thorbecke, Bornhardt, Budel, Crickmay, Wayland and Willis, Peltier, King, Horton, Strahler, Schumm, Scieddeger, Hack etc. Nature of Geomorphological problems and research (landform, landscape and space). Problems and methods- case studies . Applications of Geomorphological methods and techniques to geomorphological problems in other disciplines.

GEO 512 Quantitative Geomorphology 3

Meaning, nature and scope of quantitative geomorphology. Qualitative and quantitative geomorphology. Quantitative geomorphology in relation to Dynamic Geomorphology and the systems approach in geomorphology. The geomorphological problem: scales of measurement, the geomorphological data, descriptive and inferential statistics. Computer-aided analysis, algorithms and GIS. Sampling for geomorphologic analysis. General and specific geomorphometry: meaning, nature, and scope. Reasons and basis of terrain sampling. Indices of the land surface. Geomorphometry of drainage basins drainage density. Analysis of the character of surfaces.

GEO 513 Tropical Geomorphology**3**

The concept of climatic geomorphology. An overview of geomorphologic process in various climatic zones. Delineation of the tropics; by latitude, moisture, temperature, bioclimatology and topography. The geomorphic processes in the tropics: the roles of climate, vegetation, geology in shaping the tropical landscape. Weathering and erosion in the tropics. The case for and against separate tropical geomorphology. Drainage basins in the tropics: streams patterns and other drainage basin characteristics. Characteristic landforms in the tropics. Slope evolution models applied to tropical landscapes. Ducons and latentes. Land resources of the tropics and their contributions to economic development. Geomorphology in tropical Africa.

GEO 514 Climate Change and Geomorphological System**3**

The Earth's physical system: atmosphere, lithosphere, hydrosphere, fauna and man. The interrelationships between the systems. Importance of climate to living organisms. Climate as outcome of the state of the atmospheric system. Open and closed systems. Malankovich theory of climate change from the Mesozoic to date. Evidence of associated change of the geomorphological systems to the climate changes on earth. Lateritic crust and climate change in the tropics. Present climate change and its implications for the natural resources of the tropical lands. Climate change prediction, mapping, response and management. Natural hazards. Geomorphological inputs in predicting and managing natural hazards and disasters.

GEO 515 Fieldwork And Laboratory Analysis In Geomorphology**3**

The nature of the geomorphological problem. The paths to scientific investigations with emphasis between the problem, the model, the hypothesis, fieldwork, experimentation, findings and conclusion. Fieldwork: qualitative and quantitative- nature and characteristics of sampling,

sampling techniques and their application. Inadequacy and inadequacy of samples. Redundancy of data and its effects. Successful sampling exercise. Data collection-sources, methods, techniques, equipment. Topographic maps, aerial photographs , satellite photographs and remotely sensed imageries as sources of data. Field study of slopes; profiling and classification. Field study of soils. Soil properties investigation. Soil-slopes relationship. Studying streams: cross sectional measurement, bankfull, half bank , over-bank, stream velocity and discharge, stream flow regimes.

GEO 516 Soil Erosion and Conservation 3

The soil, its meaning and importance as a resource for mankind. Soil/land damage and degradation. The factors, processes, stages and types of soil erosion. Models of soil erosion: their validity and applications for correcting and ameliorating soil loss and damage. Gully erosion as a special phenomenon in Southeastern Nigeria. Appraisal of the results of soil erosion studies in southeastern Nigeria. Topographic, social and economic consequences of soil erosion. Soil conservation and land rehabilitation/recovery. The need for soil/land resources conservation. Approaches to soil/land resources conservation. Roles of individuals, groups, institutions and organizations in soil/land conservation and protection. Critical assessment of the Land Use Act, NESREA Act, National Policy on the Environment and EIA Acts as tools for soil/land conservation in Nigeria. Application of GIS in soil erosion studies- mapping of erosion risk, potential erosion and actual erosion in Nigeria.

GEO 517 Fluvial Geomorphology 3

The drainage basin as the theatre of fluvial action. Drainage basins as distinctive regions- Bauche, Chorley and after Chorley to present times. Precipitation in the drainage basin. The

The hydrological Cycle, its components and relevance to key environmental and societal issues. Collection and measurement of hydrological data, Surface runoff. Hydrograph analysis, Hydrological mappings. Application of GIS in watershed studies

GEO 532 Water Resources Management. 3

Meaning of water resources. Water resources management. Objectives of water resources management. Problems associated with water resources management. Modelling for watershed planning and management. Water resources development. Water resources development in the Tropics. Facets of water Resources development.

GEO 533 Hydrology of the Drainage Basin. 3

Mechanics of streamflow, Channel patterns. Sediment yield and solute transport. River regime, River water quality. Streamflow and soil erosion control. Uses of remote sensing in catchment hydrology.

GEO 534 Applied Hydrology 3

Meaning of applied hydrology, flood hazards. Types of flood hazards, adjustment to flood hazards. Water transport, water treatment, waste water management. Effects of land use and climate on water resources. Carriers in hydrology, Water resources and/or environmental management.

GEO 535 Public Water Supplies. Conceptual issues. Rural water supplies .Urban water supplies. Water supply policy. Water allocation. Post construction support in the water supply sector. Water supply systems. Water supply and human health .Water supply agencies.

Commercial water supplies .Reforms in the water supply sector. Exploitation of natural water resources. Social and environmental impact of water resources development in the tropics. Institutional framework for public water supplies in the tropics. Water supply and food security in the Tropics. Water supply infrastructure.

GEO 536 Water Pollution Studies 3

Concept of water pollution, sources of water pollution, effects of water pollution, measurement of water pollution, water pollution sampling. Water sample analysis, water pollution control, water quality monitoring. Indices for water quality monitoring, water quality modelling.

M. Sc. BIOGEOGRAHY

GEO 537 Tropical Vegetation and Mapping 4

The environment of tropical vegetation. Plant succession and climax communities. Distribution of tropical vegetation. Tropical forests, savannas, grasslands and deserts – their structure and functioning. Classification of ecological systems, floristic systems and physiognomic systems. Scale section, codification and symbolization. Tropical vegetation and climate change. Methods of vegetation analysis. Transects, quadrats and other framework designs. Classification and Ordination techniques. Application of Remote Sensing, GIS and Digital instruments in vegetation mapping. Land use and land cover analysis. Utilization of vegetation maps for forest and range conservation.

GEOG 538 Tropical Ecosystems 4

Disturbed tropical ecosystems. Tropical ecosystems and climate change. Dynamics of biogeographical populations, Ecological carrying capacities and Ecosystem productivity. Models in ecology. Dynamics of biogeographical conservation in tropical ecosystems.

Environmental quality indices. Cultural landscape and its deterioration. Conservation, maintenance and management of environmental components. Environmental laws and conventions. National and international regulatory bodies - NASREA, NOSDRA, CBD, UNEP.

GEOG 539 Biogeography of Soils 4

The soil, its meaning and importance as a resource in biogeography. Soil formation and soil forming processes. Soil minerals, organic matter, structure and porosity. Physical, chemical and mechanical properties of the soil. Soil colour, profiles and catenas. Methods and systems of soil classification. Soils and man; positive and negative relations. Soils and climate change. Laboratory and field work in soil study. Identification and sampling of soil in biogeography studies. Handling of soil samples and chain of custody. Soil analysis – analysis of physical, chemical and biological properties of soil. Soil disturbance and conservation.

M.Sc. CARTOGRAPHY

GEO 541 HISTORY OF CARTOGRAPHY 3

History of Cartography. Development of Cartography from ancient times to the present. The origin of national surveys and development of mapping in Nigeria.

GEO 542 WORLDWIDE GEOGRAPHIC SYSTEM (WGS) 3

Universal and National Grid Systems . Types of projections and their benefits. Co-ordinate types and Applications.

GEO 543 THEORETICAL FOUNDATIONS AND CARTOGRAPHIC RESEARCH 3

Diverse Map uses in geographical studies. Maps as models and model generation. Errors and blunders in maps. Research methods in cartography.

GEO 544 AUTOMATED CARTOGRAPHY AND DIGITAL APPLICATIONS 3

GEO 555 Theoretical and Ethical Bases of Environmental Management 3

Ethical models in environmental management: Strong Anthropocentrism, Ecocentrism, Pathocentrism etc., Sustainability and Sustainable development: Issues, challenges and contradictions., Pillars of sustainable development- environmental, economic, social and cultural diversity . Critical analytical approaches to environmental resource and social management: Political ecology (PE), Urban political ecology (UPE) and feminist political ecology (FPE) frameworks; Environmental Justice (EJ) and Environmental Social Movements. Case studies from Nigeria and Africa.

GEO 556 Environmental Management And Impact Assessment 3

Environmental quality indices. Cultural landscape and its deterioration. Conservation, maintenance and management of environmental components. Environmental laws and the role of UNEP. Impact assessment on the environment of various development schemes and projects. Techniques of environmental impact assessment. Fieldwork practical on impact evaluation and Management plans.

GEO 557 Environmental Pollution, Control and Management 3

Air, water, land and noise pollution. Criteria pollutants and their pollution significance. Consequences of environmental pollution. Pollution measurement. Pollution abatement, control and management. Ecological Sanitation (ECOSAN). E-waste problem and management. Waste hierarchy and integrated solid waste management (ISWM). Handling and disposal of hazardous wastes. Stabilization and solidification of hazardous waste. Elements of Environmental Law and Policy. Disaster risk management.

GEO 558 Environmental Politics and Socioecological Problems In Nigeria 3

Introduction to environmental politics and governance. Nature of Nigerian political ecological problems. Problems of the oil industry and the Nigerian environment: social, economic and political. Political economy of petroleum in the Niger delta. Urban political ecology of solid waste management in Nigeria. Social sustainability and Livelihoods in urban Solid Waste Management in Nigeria. Political ecologies of Environmental degradation and Resource Conflicts in Nigeria. Nigerian environmental policy, laws and legislation. Measures for Environmental awareness and education. Role of National Assembly and government agencies in environmental politics.

M.Sc RURAL GEOGRAPHY

GEO 561 Rural Development and Planning Problems 4

The rural concept; Challenge of contested discourses of rurality; Current rural conditions and opportunities in rural areas ;Threats to rural areas-declining fiscal capital, demographic change, climate change, etc; Climate change and food security; Innovation in the Context of Rural Areas; Modernizing the Rural Economy- Strengthening Rural Markets, Balancing Diversification and Specialization and skill building in rural areas; Concepts and Issues in rural development; Rural development objectives and policies; Models and strategies of rural development ; Optimization of rural land use and sustainable development; Empirical studies and appraisal of specific schemes of rural development in Nigeria and other countries; Principles and components of rural development plan; Rural development planning problems with particular reference to developing countries.

GEO 562 Rural-Urban Interaction 4

Theory and practice in urban and urban - centered regional planning.. Case studies and readings demonstrating the techniques used in various aspects of plan preparation within the framework of the planning process.. Urban policies and policy making in Nigeria; analysis of local, state and federal decision making processes as they affect public policy in urban area.. Impact of the forces of urban growth and changes on the urban political system, centralization and decentralization in the metropolis and inter-governmental relations.

M.Sc. INDUSTRIAL GEOGRAPHY

GEO 571 Industrial Geography: Theory and Process 3

Scope, themes and methodology of industrial geography. Industrialization process: local, regional and global context. Distribution of industries: local, regional and international. Changing pattern of manufacturing location: Nigeria, West Africa, Africa and global. Case studies: Iron, Steel; Clothing, Motor vehicles, Electronics and Petrochemical and agro industries. Production systems, value chain and globalization.

GEO 572 Industrial Location: Policies And Development Planning 3

Location and industrial development. Spatial strategy of industrial development. Industrial policies , laws and institution (Nigeria, global). The impact of industrial activity across space. Case studies of development plan and implication: Europe, America, Africa and Nigeria

GEO 574 Models and Analytical Techniques in Industrial Geography 3

Approaches to industrial location analysis: Behavioral, neoclassical and structuralist. Theories and models of industrial location: least cost, profit maximization, market area, locational dependency, industrial complex, central place theory. Analytical techniques and methods of industrial geography. Statistical Analytical tools in geography with the aid of SPSS, Geographic Information System.

analysis. The shortest path matrix, Markov Chain and input-output analysis. Application of Linear programming to Transport problems: Linear Programming Formulations approach, Graphic Solution to linear programs, simplex methods. The Transportation Model of Linear Programming: approach to trip distribution, and variations of the Classical Transportation problems. Location Allocation models. Introduction to Geographical Information System (GIS) and Computer Programming and Application of Software in Transport Geography.

GEO 577 Rural Transport

3

Development of rural transport infrastructure; means of transport, transport infrastructure, characteristics of rural transport. Relationship between rural transport network and regional development. Rural dynamics and Transport planning, design and development. The traditional, intermediate and modern sub-sectors in rural transport. Needs assessment of rural transport. Transport and crop production. Delivery of services and information flow. Land use/transportation interaction and personal mobility. Travel demand and transportation system capacity. Rural transport trends and problems. Population change and transport planning. Rural road network planning. Role of project appraisal in rural road transport planning. Intelligent transport systems. Transport surveys in rural areas.

GEO 578 Urban Transport

3

Transport and urban form. Land use and transport interaction. Urban mobility and urban transport problems. Intermodal transportation. Intelligent transport systems. Trafficflow and control. Transportation management and policy. Theory and principles of sustainability in urban transport. Urban transport planning methods and urban transport surveys. Urban dynamics and transport planning, design and development. Principles of GIS and its applications in urban transportation.

M.Sc. POLITICAL GEOGRAPHY

GEO 583 Theories and Issues in Political Geography 4

The theory of political geography. Recent trends in political geography and international relations. Political geography and planning processes. Africa and global geopolitical strategies. Theories of urban governance. Urban politics. Civil society in governance and state building. The good governance agenda. Political geography in Nigeria.

GEO 584 Models And Analytical Methods in Political Geography 4

Approaches to the study of political geography. Research problems in political geography. Models in political geography. Methods of analysis of the political organization of space in the micro and macro context. Analytical tools in political geography.

Ph.D. Programme

Ph.D candidates may be required to register or audit any of the M.Sc Courses on the recommendation and approval of the Departmental Postgraduate Board. In addition all Ph.D candidates should register for a minimum of 30 units including the underlisted courses:

Course No.:	Titles	Units
GEO 601	Doctoral Seminar I	3
GEO 603	Doctoral Seminar II	3
GEO 699	Doctoral Thesis	12
PGC 701	Synopsis and Grant writing	3

Course No.	Course Description	Units
GEOG 601	DOCTORAL SEMINAR 1	3
	Detailed written presentation of the candidates' Ph.D topic proposal; to include introduction; the research problem, aim and objectives of the research, the study area, theoretical framework, literature review, and research methodology.	
GEOG 603	DOCTORAL SEMINAR III	3
	A detailed written pre-thesis presentation of the results of the candidate's Ph.D research	
GEOG 699	DOCTORAL THESIS	12
	In-depth analysis and thoroughly researched and original presentation of results of extended field, library, statistical, computer, and/or cartographic work.	
PGC 701	SYNOPSIS AND GRANT WRITING	3
	Identification of types and nature of grant and grant writing, mining of grants application calls on the internet. Determining appropriate strategy for each grant application. Study of various grant application structures and contents and writing of concept notes. Detailed project description, budgeting and budget defense. Study of sample grant writings in various forms and writing mock research and other grants. Identification of University of Nigeria synopsis structure and requirements. (Introduction, Methodology and Results). Determining the content of each sub-unit of the synopsis. Steps in writing of synopsis from the Dissertation/Thesis document. Structural and language issues common errors in synopsis writing and strategies for avoiding them. The roles of the student and the supervisor in the production of a synopsis writing of mock synopsis. All registered Ph.D students must attend a solution-based interactive workshop to be organized by the School of Postgraduate studies for a practical demonstration and application of the knowledge acquired from the course, conducted by selected experts.	