

SURVEYING AND GEOINFORMATICS CURRICULUM DEVELOPMENT IN NIGERIA

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ABSTRACT

Digital technology and communications have revolutionised the practice of Surveying and Geoinformatics in Nigeria. Hitherto, surveyors were engaged in the act of collection of data on the earth's surface that are used for development, monitoring of activities on the earth's surface and determination of the shape and size of the earth. Today, data management, digital data conversion and data sharing have become very important issues. This has made what used to be accepted as surveying curriculum inadequate. It has therefore become necessary to modernise surveying curricula in Nigeria in order to meet the demands of the current situation.

In 1999, the National Board for Technical Education held a workshop on modernisation of curriculum of surveying courses in Colleges of Technology and Polytechnics. This brought in courses like GIS, Environmental Management, Knowledge-based Systems, Digital Surveying and Internet Technology into their programme. It was also agreed during the workshop that all surveying courses in the colleges of Technology and Polytechnics should change their names to Surveying and Geoinformatics. The National University Commission has also directed all institutions offering surveying to modernise their curricula in line with the technological development. The Department of Surveying, University of Lagos led the campaign for a change in the academic curricula and name at the university level. The Department is now called the Department of Surveying and Geoinformatics. Courses similar to the ones at the colleges of Technology and Polytechnics were introduced. These include but not limited to GIS, Digital Surveying, Coastal Management, Environmental Management and Spatial Data infrastructure, Data Acquisition Systems and Internet Technology.

This development has led to an increase in the number of students seeking admission into undergraduate and postgraduate programmes. Besides, the normal postgraduate courses at M.Sc., M. Phil. and Ph.D. levels, the Department has introduced a professional Masters of Geoinformatics program which admits a wide range of candidates from different backgrounds. This has improved the interest in the programs at the University of Lagos. As a result of the modernisation of the curricula, the Department of Surveying and Geoinformatics, University of Lagos has attracted financial and material support from the oil companies and government. This support has facilitated training and research.

1.0 INTRODUCTION

Digital technology and communications have revolutionised the practice of Surveying and Geoinformatics in Nigeria. Many users of the spatial data like Surveyors, Civil Engineers, Geologists, Estate Managers, Architects and Planners now demand that data be delivered in digital form. The advances in computer and information technologies as well as space information techniques have greatly influenced the survey methods both in data acquisition, processing and management.

A number of definitions have been given for surveying before and after digital technology and communications revolutionised the field of surveying. Some of the earlier definitions were given by Clarke (1973) and Fajemirokun (1988). Clarke (1973) defined surveying as “the art of making such measurements of the relative positions of points on the surface of the earth that, on drawing them to scale, natural and artificial features may be exhibited in their correct horizontal or vertical relationships”. However, Fajemirokun (1988) defined surveying as “that branch of geosciences which deals with the location of points on the earth’s surface, the graphical representation and visual presentation of such points and the determination of the figure of the earth and its gravity field using the methods of applied mathematics and physics as basic tools.

With the recent advances in technology, and the enlarged task of surveying, Grun (1998) called the enlarged tasks of Surveying Geomatics. He defined Geomatics as “the science of acquisition, management, modelling, analysis and representation of spatial data and processing with specific consideration of problems related to spatial planning, land use/land development and environmental issues”. Nwilo (1999) defined surveying as that branch of geosciences that deals with the location of points on the earth’s surface; the storage; retrieval and management of the geospatial data; the graphical representation and visual presentation of on such points and the determination of the figure of the earth and its gravity field using the methods of applied mathematics and physics as basic tools.

Hitherto, surveyors were engaged in the act of collection of data on the earth’s surface. Such data were used for development, monitoring of activities on the earth’s surface, and determination of the size and shape of the earth. Traditional survey equipment like the theodolite, automatic level, sextant, and electromagnetic distance measurement equipment were used for data gathering. Manual and analogue methods were used for data processing. Today, data management, digital data conversion and data sharing have become very important issues. New instrumentation, which includes Total Station equipment, digital level equipment, electronic field books, Global Positioning System receivers, the analytical plotter and digital mapping equipment are widely combined with computers as well as GIS software packages to achieve better results. Emphasis is now being shifted from mere data gathering to data gathering, processing and management.

The evolution of new instrumentation in surveying and the shift of emphasis from mere data gathering to data gathering, processing and management has made what used to be accepted as surveying curriculum inadequate. It has therefore become imperative to modernise surveying curricula in Nigeria in order to meet the demands of the current situation.

1.1 Development of Surveying Education in Nigeria

Surveying is one of the oldest professions in Nigeria (Atilola, 1999). The Nigerian Surveyor was among the first professional man to be exposed to formal training locally. A school for the training of surveyors was first established in 1908 in Lagos. That school was later moved to Ibadan in 1927 from where it finally moved to Oyo in 1935. When the Yaba College of Technology was established around 1932 as the highest institution in Nigeria, a provision was made for prospective surveyors to undergo basic educational studies in the institution for two years, followed by two years of training at the Survey School, Oyo. Successful candidates were subsequently awarded diploma of the College. The first exposure to University education came in 1947 with the establishment of the University College of Ibadan. There,

provision was made for the training of professional surveyors for the country. The programme was later discontinued following a change in the policy of the colonial administration (Nwilo *et al*, 2000).

In 1962, the Nigerian College of Technology, Enugu became part of the then two year old University of Nigeria, Nsukka and the Nigerian Surveyor was again exposed to University education. The first set of 5 students of surveying from the University graduated in 1966, 58 years after the first Survey school was opened in Lagos (Fajemirokun, 1976).

The Department of Surveying and Geoinformatics of the University of Lagos started as a sub-department of Civil Engineering Department in 1970. The initial programme of the sub-department at the time was a two-year postgraduate course of studies and research leading to an M.Sc. (Surveying) degree. Graduates in fields cognate to surveying were admitted into the programme (Department of Surveying and Geoinformatics Unilag, 1999). Prior to all these, the Faculty of Engineering of the University of Lagos in 1967 arranged for a few students who were surveying undergraduates of the University of Nigeria, Enugu Campus and who were displaced by the Civil War, to complete their degree programmes in the Faculty, and earn a degree of the University.

In the 1974/75 session, the first set of five students were admitted to pursue a three year B.Sc. programme after obtaining 3 A 'Level papers in relevant courses or having completed a one year preliminary programme in Engineering in the Faculty of Science. In addition, a postgraduate diploma programme for graduates with relevant degrees was introduced the same year. (Department of Surveying Unilag, 1980). The three-year undergraduate programme was later changed to a four-year programme to allow for enough practical experience before graduating. Presently, the Department is running a five-year undergraduate programme.

The Department of Surveying, Ahmadu Bello University, Zaria was set up at about the same time that the University of Lagos started offering Surveying at postgraduate level, and had since been turning out graduates in surveying. University training in surveying is also offered at the Enugu State University, Enugu, Federal University of Technology Minna, Rivers State University of Science and Technology Port-Harcourt, Abubakar Tafawa Balewa University Bauchi, Imo State University Owerri, University of Uyo Uyo and the Federal University of Technology Yola. This makes it a total of ten universities offering professional training in the field of surveying in Nigeria at present.

There are currently sixteen Polytechnics and one Federal School of Survey running the National Diploma programme in Surveying at the technician levels; four of these institutions also run the Higher National Diploma programme at the technologist level (Bardi, 1996).

2.0 SURVEYING AND GEOINFORMATICS CURRICULUM DEVELOPMENT

2.1 Surveying and Geoinformatics Curriculum Development in Nigerian Polytechnics

Kufoniya and Ajibade (1999) identified four broad specialised areas for consideration in developing new curricula for polytechnics and universities. These areas are:

- (i.) Spatial data acquisition through Computer-Aided Surveying, Analytical and Digital photogrammetry, Remote Sensing; conversion of analogue map and other geospatial data into digital form using manual digitising and scanning, and attribute data collection methods.
- (ii.) Spatial data management, which requires among others knowledge of database design and creation, database management systems, data transfer and exchange, spatial query development, spatial statistics.
- (iii.) Cartography and geoinformation visualisation, dealing with data formats and information presentation: and
- (iv.) Geospatial information infrastructure and management, dealing with aspects such as spatial standards, GIS policy, implementation issues.

Geoinformatics education should be strong at conceptual level so that the graduates of the course can be versed not only in the use of GIS packages but also in GIS development. The graduates should possess the knowledge of every link and data flow in Geoinformatics process from spatial data collection, through spatial analysis and application, to spatial information communication (Kufoniyi, 1999).

In Nigeria, the National Board for Technical Education (NBTE) curriculum is used by all Polytechnics and similar institutions to train survey technicians and technologists. Thus, the main role of the Polytechnics in Nigeria is the training of technicians (National Diploma Certificate holders) and Technologists (Higher National Diploma Certificate holders) on production work and technical management for direct employment in industry and public service.

The structure of the National Diploma (ND) programme consists of four semesters of classroom, laboratory and workshop activities in the institutions, and a semester of three to four months duration of supervised industrial training. The structure of the Higher National Diploma (HND) programme is similar to that of the ND except that the supervised industrial training is not compulsory.

The National Board for Technical Education (NBTE) in collaboration with the Federal School of Surveying, Oyo in March 1998, held a workshop to review the curricula for survey courses in Nigerian polytechnics and Federal School of Surveying, Oyo. At the workshop, the following programmes were recommended:

- (i.) National Diploma (ND) in Surveying and Geoinformatics
- (ii.) Higher National Diploma (HND) in Surveying and Geoinformatics
- (iii.) Professional Diploma (PD) i.e. Post HND in Surveying and Geoinformatics.

The new curricula brought in courses like GIS, Environmental Management, Knowledge-Based Systems, Digital Surveying and Internet Technology. The course structure, which took into consideration the areas identified by Kufoniyi and Ajibade (1999) are given in Table 2.1 to Table 2.3 below. The list of the equipment needed to run the programmes is also shown in Table 2.4.

Table 2.1: Curriculum for National Diploma in Surveying and Geoinformatics

S/N	Course	S/N	Course
1	Basic Principles in Surveying I and II	14	Field Astronomy I & II
2	Introduction to Photogrammetry and Remote Sensing I and II	15	Surveying Instrument I
3	Basic Principles in Cartography I and II	16	Control Surveys
4	Introduction to Computer	17	Elements of Geo-Informatics
5	Introduction to Statistics	18	Database Creation and Use.
6	Logic and Linear Algebra	19	Optics, Waves, Electricity&Magnetism.
7	Mechanics & Properties of Matter & Heat	20	Calculus.
8	Use of English I	21	Introduction to Sociology.
9	Citizenship Education I & II.	22	Engineering Surveying I.
10	Cadastral Surveying I, II & III.	23	Topographical Surveying I.
11	Computer Application I.	24	Trigonometry & Analytical Geometry.
12	Algebra & Elementary Trigonometry.	25	Final Project.
13	Communication in English I		

Table 2.2: Curriculum for Higher National Diploma (HND) in Surveying and Geoinformatics

S/N	Course	S/N	Course
1	Cadastral Surveying IV & V.	15	Principles of Geo-Informatics.
2	Astronomy III & IV.	16	Advanced Calculus.
3	Survey Instrument.	17	Hydrographic Surveying.
4	Geodetic Surveying I & II.	18	Analytical and Digital Photogrammetry.
5	Topographical Surveying I & II.	19	Digital Mapping.
6	Electromagnetism; Terrestrial and Planetary Physics.	20	Automated Surveying.
7	Fundamentals of Computers.	21	Geographical Information Tools.
8	Elements of Photogrammetry.	22	Management in Surveying.
9	Advanced Algebra.	23	Digital Cartography.
10	Communication Skill III.	24	Introduction to Environmental Studies.
11	Engineering Surveying.	25	French for Beginners.
12	Adjustment Computation I & II.	26	Outline History of Africa.
13	Physical Optics; Atomics & Nuclear Physics.	27	Final Project.
14	Computer Application.		

Table 2.3: Curriculum for Professional Diploma (Post HND) in Surveying and Geoinformatics

S/N	Course	S/N	Course
1	Advanced Computer Programming.	12	Database Design & Creation.
2	Computer Aided Surveying.	13	GIS Hardware & Software
3	Satellite Geodesy	14	Advanced Digital Mapping
4	Principles of GIS.	15	Professional Practice
5	Remote Sensing	16	Surveying & Allied Regulations.
6	Advanced Analytical & Digital Photogrammetry.	17	Digital Terrain Modelling.
7	Advanced Hydrographic Surveying	18	GIS Applications
8	Advanced Maths.	18	GIS Project Planning & Management
9	Advanced Map Projections & Co-ordinate Systems	20	Seminar
10	Geometric Geodesy.	21	Final Project

11	Physical Adjustment Computation.		
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Table 2.4: Equipment Required for Surveying and Geoinformatics Programmes in a Nigerian Polytechnic

Equipment	Optimum System Required
Personal Computers	4 Students to 1 PC
GPS	3 Sets
Total Station	6
Digital Level	6
Digitizer (Various Sizes)	12
Scanner (Various Sizes)	6
Gravimeter	1
Digital Theodolite	6
Digital Photogrammetric Workstation	2
Digital Image Processing System	1
Hydro-Positioning System	1
Plotter (Various Sizes)	3
GIS Software (different types)	6

The Federal school of Surveying, Oyo at the beginning of the 1998/99 session transformed all its programmes from analogue to digital in line with the NBTE curricula. The School presently runs the following programmes:

- i. National Diploma (ND) in Surveying and Geoinformatics
- ii. Higher National Diploma (HND) in Surveying and Geoinformatics
- iii. Pre –Professional Diploma (PPD) in Surveying and Geoinformatics
- iv. Professional Diploma (PD) in Surveying and Geoinformatics
- v. Post Graduate Diploma (PGD) in GIS.

In addition to the programmes above, the school also runs certificate and advance certificate short-term courses ranging from three months to six months. Federal School of Surveying, Oyo is also reasonably equipped with the necessary hardware and software for the various programmes.

2.2 Surveying and Geoinformatics Curriculum Development in Nigerian Universities

In line with the development in colleges of Education and polytechnics, the National University Commission (NUC) also directed all institutions offering surveying to modernise their curricula. Advancement in technology coupled with the changing trends in the surveying profession led to a worldwide debate on the appropriate name for the profession. A number of training institutions and establishments after the debates changed their names. Some of the new names adopted are Geomatics, Surveying and Geoinformatics, and Geodesy and Geomatics Engineering. The global wind of change in name of the profession also blew across Nigeria.

The Department of Surveying and Geoinformatics, University of Lagos formerly known as the Department of Surveying University of Lagos led the campaign for the change in name of the profession. The campaign for the change in name was cushioned with a workshop on

Surveying and Spatial Information Technology in July 1999 organised by the Department of Surveying and Geoinformatics, University of Lagos. The objectives of the workshop were to determine the appropriate name and direction for the profession in the Department as well as in the country (Nwilo *et al*, 2000). Experts in the profession across the country from tertiary institutions, oil companies, government agencies and other key management leaders participated in the workshop. Papers were delivered by some of the experts in the profession. At the end of the workshop, the Department adopted the name “ Surveying and Geoinformatics’. The new name had since been approved by the University Authority.

Some of the other training institutions and establishments in Nigeria with the new name tags are:

- i. Department of Surveying and Geoinformatics
Federal School of Surveying, Oyo.
Nigeria
- ii. Department of Geoinformatics and Surveying
University of Nigeria
Enugu Campus, Enugu-Nigeria
- iii. Geomatics Division
Shell Petroleum Development Company
Nigeria

In line with the developments in our field in recent times, the Department of Surveying and Geoinformatics, University of Lagos recently reviewed its various degree programmes and came out with new structures, whose curricula tend to address the shortcomings of the past (Fajemirokun and Nwilo, 2000).

Department of Surveying and Geoinformatics, University of Lagos reviewed her curricula in line with the change of emphasis in the profession from mere data gathering to data gathering, data processing and data management. Some of the new courses introduced at the undergraduate level include Computer Application in Surveying, Principles of Geoinformation, Digital Mapping, Coastal Mapping and Management and GIS Tools and Applications. Table 2.5 shows the revised undergraduate programme at the University Of Lagos.

Table 2.5: Undergraduate Surveying and Geoinformatics Programme Course Listings at University of Lagos, Lagos, Nigeria

Year I First Semester		Second Semester	
Course Titles	Units	Course Titles	Units
History of Surveying	1	Basic Surveying I	1
Pure Maths 1	3	Pure Maths II	2
Applied Maths 1	3	Applied Maths II	2
Workshop Practice	1	Workshop Practice II	1
Technical Drawing	2	Technical Drawing II	2
Introductory Physics I	3	Introductory Physics II	2
Nigerian People & Culture	2	Introductory Physics III	3
Intro. to Logic & Philosophy	2	Lab (Physics)	2

TS2.5 Surveying Core Curriculum
Peter C. Nwilo and Olusegun T. Badejo
Surveying and Geoinformatics Curriculum Development in Nigeria

Use of English	1	History & Phil. Of Science	2
		Use of English	1
Year II First Semester	Units	Second Semester	Units
Basic Surveying II	3	Engineering Surveying	3
Cartography	3	Intro. Engr. Stat.& Comp. System.	3
Engineering Maths I	3	Intro. To Astrophysics	2
Fund. Of Elect. Engr.I	3	Photogrammetry I	3
Classical Mechanics I	2	Practical Physics II	1
Practical Physics I	1	Gen. African Studies II	2
Geophysics I	2	Remote Sensing I	3
Gen. African Studies I	2	Comp. Application in Surveying I	2
Optics	2		
Year III First Semester	Units	Second Semester	Units
Cadastral Surveying I	3	Geodetic Surveying	3
Spherical and Field Astronomy	3	Cadastral Surveying II	3
Applied Town Planning	2	Geodetic Astronomy	3
Adjustment Computation I	3	Electronic Surveying	3
Hydrographic Surveying I	3	Comp. Application in Surv. II	3
Prin. Of Geo. Info. System I	3	Digital Mapping I	2
Classical Mechanics II	2	Industrial Training	4
Elective		Plus at least 2 units of Electives	
Introduction to Swimming I	1	Operational Methods	2
		Introduction to Swimming II	1
		Engineering Geology	3
Year IV First Semester	Units	Second Semester	Units
Map Projection	3	Industrial Attachment	8
Photogram.& Remote Sensing I	3		
Geodesy I	3		
Digital Mapping II	2		
Engineering Statistics	2		
Numerical Methods. In Engineering	3		
Technical Communications	1		
Electives at least 5 Units			
Mining & Underground Surv.	3		
Poten. Theory & Sph. Harmonics	2		
Special Surveys	3		
Year V First Semester	Units	Second Semester	Units
Adjustment Computation II	3	Adjustment Computation III	3
Survey Laws & Regulation	2	Prof. Practice and Ethics	3
Engineering Economics	2	Project	3
Project	3	Engineering Law & Management	2
Electives at least 7 Units		Electives at least 9 Units	
Special stud. In Dig. Rem. Sensing.	3	Physical Geodesy	3
Geometry Geodesy	3	Hydrographic Surveying II	3

Photogram. & Remote Sensing II	3	Marine Surveying	2
Intro. To Coast. Mapping & Managmt.	2	Ground Water Hydrology	2
GIS Tools and Applications	3	Spec. Stud. In Analyt. & Dig. Photogram.	3
Surface Water Hydraulics	2	Satellite Geodesy	3
River Engineering	2	Applied Geophysics	2
Mathematical Geodesy	2	Close Range Photogrammetry	3

At the Graduate level, some of the new courses introduced are Data Acquisition Systems, Advanced Concepts in Geoinformatics, Spatial Data Structures, GIS Implementation Strategies, Spatial Statistics, Policy Issues in GIS Implementation, Digital Cartography, Knowledge-Based Systems and Environmental Management. Internet Technology was also introduced at undergraduate and Postgraduate levels. Similar modifications have also been made to programmes at Master of Science degree and Doctorate levels.

The concept of National Geospatial Data Infrastructure is becoming increasingly popular. This concept is based on the fact that most of the activities of man are spatial and that there are certain infrastructures that must be available for the effective access and sharing of geospatial data. As a result of this, stakeholders in geospatial data within and outside Nigeria met in Abuja, Nigeria's Capital City for three days to discuss the necessary ingredients for effective implementation of a National Geospatial Data Infrastructure (NGDI). Participants also discussed the draft NGDI Policy. As a result of the importance of NGDI in the physical and economic development of the country, the Department of Surveying and Geoinformatics at the University of Lagos has decided to add the concept of NGDI as part of Policy Issues in GIS Implementation. It is hoped that in future, concepts of NGDI will be a course on its own.

3.0 MATERIALS AND FINANCIAL SUPPORT FOR THE NEW PROGRAMMES

The modification of the curricula in surveying for polytechnics and universities offering Surveying and Geoinformatics is attracting material and financial support from government and non-governmental agencies. The Federal Survey School Oyo is being well funded by the Federal Government. The school is well equipped with modern equipment and software to facilitate geoinformatics education. The various training programmes being organised by the school is also attracting more people into the profession. The school plans to run higher degree programmes in collaboration with other training institutions. In addition to the increase in subvention to Nigerian Polytechnics by the Federal and State Governments, more survey departments are also being established in Nigerian Polytechnics by the Federal and State government.

The introduction of the new courses in the Department of Surveying and Geoinformatics, University of Lagos led to an increase in the number of students seeking admission into our undergraduate and postgraduate programmes. In the last two years an average of hundred students were admitted into the undergraduate programme. The situation is likely to remain so for a long time. The other factor that has impacted positively on the admission into the department is the relative peace that the University of Lagos has enjoyed for sometime now. The only major disruption of academic peace at the University of Lagos in the last few years has been the six-month Academic Staff Union of Universities strike that engulfed the university system from December 2002 to June 2003.

Besides the normal postgraduate courses at M.Sc., M.Phil. and Ph.D. levels, the Department in 1999 introduced a Professional Master of Geoinformatics programme which admits a wide range of candidates from different backgrounds. The programme is open to graduates in Surveying, Engineering, Physical Sciences, Social Sciences, Environmental Sciences, Business Management and Forestry. This programme is also attracting many people from different backgrounds. It is important to mention here that the Department of Geography at the University of Lagos and at the University of Ibadan have also started a Masters programme in Geographic Information System. The essential difference between the Geoinformatics programme and the Geographic Information System programmes is in the background of the proponents of the programmes. While the Geoinformatics programme is mounted by academics that are rooted in Surveying, the GIS programmes are mounted by academics with Geography background. The emphasis in the programmes may therefore be slightly different. But, both programmes are meant for the same market.

The Modernisation of the curricula in the Department of Surveying and Geoinformatics, University of Lagos has attracted financial and material support from the oil companies and government. The Department received three computers from NNPC/Chevron joint venture last year. Also last year ESRI donated ArcView GIS 8.1 to the Department. The total cost of the facilities is about \$180,000.00. In addition, the University of Lagos Authority has continued to support the department. In 2001, the University administration provided seven new computers to the department. Four years ago, the Department of Surveying and Geoinformatics got the support of Trends Communication Nigeria Limited, which gave the Faculty of Engineering, University of Lagos an unlimited 24hour internet access and equipment like modem and radio. This Internet access is resident in the Department of Surveying and Geoinformatics, University of Lagos. The donations from governmental and non-governmental agencies have facilitated training and research in the department.

4.0 CONCLUSION

Digital technology and communications have revolutionised the practice of the Surveying profession in Nigeria. The task of the profession has been broadened from mere data gathering to that of data gathering, data processing and management. Professionals from other fields require data in digital format. It has therefore become paramount to modernise what used to be the surveying curricula in Nigeria.

In line with the change of emphasis from just data gathering to data gathering, data processing and management, the training institutions offering surveying in Nigerian polytechnics and universities have modernised their curricula to meet the current needs of the society. New courses like GIS, Digital Surveying, and Coastal Management were brought into the new curricula.

The departments offering surveying in Nigerian polytechnics and universities also decided to change the names of their departments and institutions to reflect the new changes in the profession. Some of the new names adopted are Surveying and Geoinformatics, Geoinformatics and Surveying, and Geomatics.

The new developments in the profession led to an increase in the number of students seeking admission into Nigerian polytechnics and universities. New courses like PGD GIS and Master of Geoinformatics have been introduced in Federal School of Surveying Oyo and Department of Surveying and Geoinformatics, University of Lagos respectively.

The Modernisation of the curricula in training Institutions offering surveying and in Nigerian Polytechnics also attracted financial and material support from the oil companies and government. Training and research has therefore been facilitated in these institutions.

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BIOGRAPHICAL NOTES

Dr. Peter C. Nwilo is Senior Lecturer in the Department of Surveying and Geoinformatics, University of Lagos, Akoka - Lagos. He has over 48 papers in journals, conference proceedings and seminars. He has published extensively in the areas of coastal management, GIS applications, and curriculum development in surveying and geoinformatics, GIS laws, etc. He has B.Sc. and M.Sc. degrees in Surveying from the University of Lagos and a Ph.D. degree in Environmental Resources from the University of Salford, UK



Dr. Nwilo is a surveyor with a strong interest in coastal/environmental management. His Ph.D. thesis was on "sea level variation and the impact along the coastal areas of Nigeria". This thesis is a very useful contribution to the understanding of coastal processes along the coast of Nigeria.

Dr. Nwilo is a member in the editorial board of a number of journals and papers such as the journal of Environmental Education and Information. He is a member of the University of Lagos Senate and several university committees. He has attracted several research and teaching facilities to the university.

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