

commonly possesses knowledge from a number of disciplines. These disciplines integrate science and technology from traditional to modern day techniques and include: Geodesy, hydrography, navigation and positioning systems, Geographical Information Systems, Land Surveying, Remote sensing, Cartography, Digital Mapping, Image Processing, Application Programming, Land management among others. Geomatic engineers provide data which helps maintain national and global geographic reference systems. This ensures that technologies such as GPS are working well and software like Google earth are able to at some accuracy show the position of an object on the earth's surface and how a particular area looks like. Geographic Information Systems (GIS) too provide users with an analytic tool that helps to model problems, and predict behaviours of certain phenomena. For instance, GIS can predict to a good degree of accuracy the expanse of a flood plain in terms of direction and speed in times of flooding. Technologies such as remote sensing rely on reflectance of various objects to determine change patterns over a period of time, for example, it can be used to monitor the rate at which forest cover is being lost or the health of crops.

9.3.4 Quantity Surveying education in Nigeria

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The focus of this section is on quantity surveying education in Nigeria. Additional information on quantity surveying education in Ghana and elsewhere in Africa can be found in contributions by Fugar and Adinyira (2011) and Badu and Amoah (2005). The increasing complexity of commerce and industry, need for more scientific and technical and an improved desire for greater accountability are some reasons for the growth of Quantity surveying profession (Ashworth and Hogg, 2007). Thus, Quantity Surveyors need to acquire broad-based education to enable sustainability and uplifting of the socio-economic standard of the nation. Some of the major universities in West Africa that offer education in Quantity Surveying include Ahmadu Bello University; Federal University of Technology, Akure; Kwame Nkrumah University of Science and Technology, Kumasi; Obafemi Awolowo University; Federal University of Technology, Minna and University of Lagos. Quantity surveying (QS) is a field often concerned with construction costs and contracts. According to Murdoch and Hughes (2008), the need for measurement and valuation of work in progress and cost planning is what led to the emergence of quantity surveying. The profession developed during the 19th century and currently covers a wide range of competency areas. For further details about competency areas see the section on quantity surveying in the RICS Assessment of Professional Competence guidelines which explains the practical training and experience which, when combined with academic qualifications, leads to RICS membership. The Quantity Surveying programme in academic institutions is aimed particularly at those who will become consultants in construction cost management or financial managers of construction organisations. Therefore, such

programmes are designed to provide students with knowledge and understanding of the basic techniques and skills related to construction cost and financial management. This enables graduates of QS programmes to acquire the ability to manage the cost and finance of development projects, on behalf of a developer, and manage the financial administration of construction operations. Graduates from the Quantity Surveying programme most frequently enter employment with consultants and organisations who offer construction cost, project management and contract administration services.

Quantity surveying courses are offered at various universities and polytechnics in Nigeria. For a long while many people outside the construction industry in Nigeria could not differentiate between the Quantity Surveying from Land Surveying profession, no wonder, initially the two were sections under the same department (Surveying) in Faculty of Engineering, Ahmadu Bello University for several years until the recent separation.

Quantity surveying profession is practiced in Nigeria in a similar pattern to the way it is practiced in the United Kingdom and other Commonwealth countries. Quantity surveying as a course in environmental technology is offered in two (2) colleges of Technology, eleven(11) polytechnics and nine(9) universities in southern Nigeria (see Table 9.6), while only five polytechnics and three universities in Northern Nigeria.

Table 9.6 Institutions in Nigeria offering Quantity Surveying Programmes

Universities	Polytechnics
Ahmadu Bello University, Zaria	Federal Polytechnic, Auchi
Federal University of Technology, Minna	Federal Polytechnic, Kadun
Abubakar Tafawa Balewa University, Bauchi	Federal Polytechnic, Kaura Namoda
University of Lagos, Lagos.	Federal Polytechnic, Nekede, Owerri
Federal University of Technology, Akure	Federal Polytechnic, Nasarawa
Enugu State University of Science and Technology, Enugu	Federal Polytechnic, Oko
Ladoke Akintola University of Technology, Ogbomosho	Federal Polytechnic, Ibadan
Nnamdi Azikiwe University of Technology, Awka	Federal Polytechnic, Ilaro
Obafemi Awolowo University of Ile-Ife.	Federal Polytechnic, Ado Ekiti
Rivers State University of Science and Technology	Federal Polytechnic, Idah
Ekiti State University, Ado-Ekiti	Ondo State Polytechnic, Owo
Imo State University, Owerri	College of Technology
	Kwara State College of Technology
	Yaba College of Technology , Yaba, Lagos
	Akanu Ibiam Federal Polytechnic , Unwana Afikpo
	Federal Polytechnic , Ede
	Federal Polytechnic , Bauchi
	Lagos State Polytechnic , Ikorodu Lagos

Ahmadu Bello University, Zaria was the first to start degree programme in Quantity Surveying in West Africa in 1971. At inception, the duration of the programme was

three (3 years), with entry requirement of three (3) Advance-level passes including mathematics and physics. The duration of the course was increased to four (4) years in 1981 in line with other courses in the Faculty of Engineering where the programme was then domiciled until recent 2009 when it was moved to Faculty of Environmental Design.

Quantity surveying education in Nigerian institutions involves teaching in various areas including:

- Carrying out feasibility studies of capital project
- Cost modelling which means preparation of cost estimates, budgets, cost planning, monitoring and control cost, as well as cost research.
- Contract documentation which include preparation of bills of Quantities and other tender documents, giving advice on tendering/ bidding procedures, contractual arrangement and tender evaluation and analysis.
- Contract administration which means management of construction work and cost during the execution of the project.
- Project Management which means the co-ordination of the efforts of all the consultants and contractors from the inception of the project to completion in order to achieve desired result within pre-determined time and cost frame work.
- Arbitration in case of disputes between the project owners i.e. the client and the contractors

The curriculum may differ slightly amongst the various Institutions, although efforts are being made currently to harmonise the curricula across the country with the aid of Information Technology. Core courses in the Institutions include: measurement of construction works, Construction Technologies, construction management, tendering and estimating, cost planning and control, law of contract etc.

The Nigerian Institute of Quantity Surveyors (NIQS) and the Quantity surveyors Registration Board of Nigeria (QSRBN) are professional bodies formed to further assist in education. The NIQS was founded in 1969 by a group of Nigerians who trained, qualified and practiced in the United Kingdom but who upon returning to Nigeria sensed the urgent need to develop the profession of Quantity Surveying in Nigeria by establishing a parallel body to the Royal Institution of Chartered Surveyors (RICS) of United Kingdom.

In 1986, the Federal Government recognized the Nigerian Institute of Quantity Surveyors through the Quantity Surveyors Registration, etc. Decree No.31 of December, 1986. Consequently upon this recognition, a Quantity Surveyors

Registration Board of Nigerian (QSRBN) was thus established by Government to regulate the practice of Quantity Surveying in Nigeria. Prior to this recognition, the Nigerian Institute of Quantity Surveyors, had operated under the Lands perpetual Succession Act to which it was registered in 1970.

The regulated and other Professions (Miscellaneous Provisions) Act 1978 recognised Quantity Surveying profession as one of the scheduled Professions while the decree No.31 of 1986 gave legal backing and recognition to the Quantity Surveying profession and also set up the Quantity Surveyors Registration Board.

Membership of the NIQS are in various stages, student, probation, graduate, cooperate memberships and fellows. Quantity Surveying students are eligible students members by duly registering as such. On completion of the University or Polytechnic for a period of five or four years to obtain Bachelor degree or HND as the case may be, a two years period of practical professional training is the next and at the end of which the candidate will have to sit and pass a professional competence Test conducted by Nigerian Institute of Quantity Surveyors (NIQS). HND graduates are permitted to sit for the Graduate ship examination immediately after graduation. The last stage is the candidate's registration to practice the Profession, by the Institute of Quantity Surveying Registration Board of Nigeria (QSRBN).

Industrial Training Fund (ITF) also contributes to a good extent in Quantity surveying education in Nigeria. The ITF is a Federal Government organisation working in collaboration with Institutions to enable students acquires industrial training before completing academic training in their various fields of studies. Usually the training spans between six months to 12 months. For Quantity Surveying programme in the universities, the Industrial Training spans a period of six months during the second semester of the fourth session of the five years programme. The Industrial Training for the polytechnics is usually at the end of a student's two years Ordinary National Diploma (OND) and spans a period of one year before enrolling for a Higher National Diploma (HND).

Urban and Regional Planning

Urban and regional planning has to do with the science of creating physical spaces where people can live, work and play happily. According to Hall (2002), this type of planning has to do essentially with spatial planning and organization. If a city will develop and function well, the work of city and town planning officials is essential. Cities are always on the move and planning for a city or town is a balancing act because of conflicting agendas that have to be addressed in the same development plan. Putting together the plans for a city or town is a difficult act that requires a lot of skill and ideas about how cities function and future needs. A development plan will therefore involve trade-offs and the work of planners involve solving some of the dilemmas. Planners help to create the built environment. Cities like Accra,