



National Universities Commission

**Core Curriculum and Minimum Academic Standards
for the Nigerian University System
(CCMAS)**

Environmental Sciences 2023

Ten Unique Features

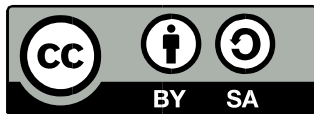
1. Production of graduates that are grounded in the conceptual framework of humans and the environment.
2. Development of compatible design options based on the theoretical knowledge of the conceptual framework of humans and the environment.
3. Identifying the dynamics in the ever-changing needs of humans that make them to explore the environment.
4. Development of competence in planning, construction and management of things that add value to human existence in the environment.
5. Development of problem-solving skills in the different programmes of Environmental Sciences in resolving the challenges and the problems emanating from the interrelationship between humans and the environment.
6. Development of skill in prediction and interpretation of future interrelationship between humans and the environment.
7. Development of marketing skills and organisational skills needed for professional practice.
8. The curricula emphasize communication skills that prepare graduates for easy integration into the global academic and professional environments.
9. The discipline gives emphasis to acquisition of sound knowledge of Computer-Aided Design and information technology skills needed in the 21st Century.
10. The Minimum Academic Standards component are well structured and lucidly spelt out to ensure that spaces and facilities are adequate and not compromised so that graduates produced can be sufficiently equipped for professional practice.

Executive Secretary: Abubakar Adamu Rasheed

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Foreword

In furtherance of the “change” mantra of the present administration, I published a roadmap to guide my Ministry on ways of addressing the multiple problems that faced the education sector of the country shortly after my assumption of office in 2016. Known as “***Education for Change: Ministerial Strategic Plan – 2016-2019***” (updated to 2018-2022), the content of the document reaffirms government’s commitment to strengthening institutional structures and establishing innovative approaches that would quickly revamp the education sector.

The nations’ universities hold a pride of place in the execution of such a strategy, being at the peak of the educational system and charged in an overall manner, with the responsibility of catalysing the sustainable and inclusive growth and prosperity that the “change” mantra envisions. Thus, a “rapid revitalization of the Nigerian university system”, which is proceeding apace, became imperative. Improvement in research, teaching and learning facilities, deepening ICT penetration and the provision of enhanced power supply in our university campuses are some of the areas receiving stringent attention. In the same vein, the need was felt to radically review the curricula which universities had used for more than a decade so as to put in place one that would more directly address local issues, meet international standards and is fit for purpose for the training of 21st century graduates.

The National Universities Commission has concluded the review of the former *Benchmark Minimum Academic Standards (BMAS)* of 14 disciplines into those of *Core Curriculum and Minimum Academic Standards (CCMAS)* of 17 disciplines. I am therefore pleased to present these documents to the universities, the general public and the international community as I am sure that their application would tremendously uplift scholarship in our universities. I thank all and sundry who worked assiduously to bring this seminal enterprise to fruition.

Malam Adamu Adamu

Honourable Minister of Education

Preface

Section 10 (1) of the Education (National Minimum Standards and Establishment of Institutions) Act, Cap E3, Laws of the Federation of Nigeria 2004, empowers the National Universities Commission to lay down minimum standards for all universities and other degree awarding institutions of higher learning in the Federation and the accreditation of their degrees and other academic awards. The earliest efforts at giving effect to this legal framework in the Nigerian University System (NUS) started in 1989 following the collaboration between the Commission and Nigerian Universities, which led to the development of the Minimum Academic Standards (MAS) for all programmes in Nigerian universities. The MAS documents were subsequently approved by the Federal Government for use as a major instrument for quality assurance in the Nigerian University System (NUS). The documents were employed in the accreditation of programmes in the NUS for over a decade.

In 2001, the Commission initiated a process to revise the documents because the said MAS documents were essentially content-based and merely prescriptive. In 2004, the Commission developed outcome-based benchmark statements for all the programmes through a workshop that allowed for exhaustive deliberations by relevant stakeholders. Following comments and feedback from the universities to the effect that the Benchmark-style Statements were too sketchy to meaningfully guide the development of curriculum and inadequate for the purpose of accreditation, the Commission, in 2007 put in place a mechanism for the merger of the Benchmark-style Statements and the revised Minimum Academic Standards, which birthed the Benchmark Minimum Academic Standards (BMAS). The resultant BMAS, an amalgam of the outcome-based Benchmark statements and the content-based MAS clearly articulated the Learning Outcomes and competencies expected of graduates of each academic programme in Nigerian Universities without being overly prescriptive while at the same time providing the requisite flexibility and innovativeness consistent with institutional autonomy. In all, the BMAS documents were developed for the thirteen existing disciplines namely, **Administration and Management, Agriculture, Arts, Basic Medical Sciences, Education, Engineering and Technology, Environmental Sciences, Law, Medicine and Dentistry, Pharmaceutical Science, Sciences, Social Sciences and Veterinary Medicine.**

The Commission, in 2016, in its sustained commitment to make the NUS adaptable to global trends in higher education, constituted a group of relevant academic experts to develop a BMAS in **Computing**, thus increasing the number of disciplines in Nigerian Universities to fourteen.

In keeping with its mandate of making university education in Nigeria more responsive to the needs of the society, the National Universities Commission commenced the journey to restructure the BMAS in 2018, introducing in its place, the **Core Curriculum and Minimum Academic Standards (CCMAS)**, to reflect the 21st Century realities, in the existing and new disciplines and programmes in the Nigerian University System.

The new CCMAS is a product of sustained stakeholder interactions over two years. The composition of each panel took into consideration, the triple helix model, as a unique feature. This involved a blend of academic experts, academies, government (represented by NUC), professional bodies and of course, the private sector represented by the Nigerian Economic Summit Group (NESG). In order to enrich the draft documents, copies of each discipline were forwarded to all critical stakeholders including the relevant academic units in Nigerian Universities, the private sector, professional bodies and the academies for their comments and input. These inputs along with the curriculum of programmes obtained from some foreign

and renowned universities served as major working materials for the various panels constituted for that purpose.

Bearing in mind the need to adhere to covid-19 protocol as prescribed by the National Centre for Disease Control (NCDC), the Commission was compelled by prevailing circumstances to finalize the curriculum virtually. General Assemblies were also held via Zoom, comprising, the NUC Strategic Advisory Committee (STRADVCOM), Chairpersons/Co-Chairpersons of the various disciplines and Panel Members of the respective programmes. Each Discipline and Programme had NUC representatives who assisted panellists with all the tools and working materials. Several online meetings were held at programmes level, where the real business of developing the CCMAS took place. The products of the various programme-based virtual meetings were submitted to the corresponding discipline group and then to the National Universities Commission. These documents were further scrutinized and fine-tuned by a smaller group of versatile subject matter specialists and relevant private sector practitioners.

In line with the dynamism in higher education provisioning, the Commission took cognizance of complaints by the universities on the high number of General Studies (GST) courses in the BMAS, and was subsequently streamlined. Entrepreneurship courses such as Venture Creation and Entrepreneurship, and innovation found generous space. In addition, the new curriculum unbundled the Bachelor of Agriculture, Bachelor of Science in Mass Communication and the Bachelor of Architecture Programmes, while establishing some emerging specializations in these fields as obtained globally. This is in furtherance of the goal of producing fit for purpose graduates. The Allied Health Sciences was also carved out as a new Discipline from the existing Basic Medical Sciences discipline.

Preceding the completion of the curriculum review content and language editing, a 3-day validation workshop (face-to-face mode) involving critical stakeholders, including STRADVCOM, Vice-Chancellors and Directors of Academic Planning of Nigerian Universities, as well as the Nigerian Economic Summit Group (NESG) was organized by the Commission to validate the CCMAS documents, and to engender ownership for ease of implementation.

Consequent upon the afore-mentioned processes, seventeen CCMAS documents were produced for the following academic disciplines in the NUS:

1. Administration and Management
2. Agriculture
3. Allied Health Sciences
4. Architecture
5. Arts
6. Basic Medical Sciences
7. Computing
8. Communication and Media Studies
9. Education
10. Engineering and Technology
11. Environmental Sciences
12. Law
13. Medicine and Dentistry
14. Pharmaceutical Science
15. Sciences
16. Social Sciences
17. Veterinary Medicine

The CCMAS documents are uniquely structured to provide for 70% of core courses for each programme, while allowing universities to utilise the remaining 30% for other innovative

courses in their peculiar areas of focus. In addition to the overall Learning Outcomes for each discipline, there are also Learning Outcomes for each programme and course. In general, programmes are typically structured such that a student does not carry less than 30 credit units or more than 48 credit units per session.

Consequently, the Commission is optimistic that the 2021 CCMAS documents will serve as a guide to Nigerian Universities in the design of curriculum for their programmes with regards to the minimum acceptable standards of input and process, as well as, measurable benchmark of knowledge, 21st century skills and competences expected to be acquired by an average graduate of each of the academic programmes, for self, national and global relevance.

Professor Abubakar Adamu Rasheed, *mni, MFR, FNAL*
Executive Secretary

List of Reviewers

Title	Surname	First Name	Institution	Programme
Professor	EZIASHI	Augustine C.	University of Jos, Jos	Chairman
Professor	AKINBOGUN	Tolulope Lawrence	Federal University of Technology Akure	Co-Chairman/ Industrial Design
Professor	OKOLIE	Kevin	Nnamdi Azikwe University, Awka	Building
Professor	ACHUENU	Emmanuel	Council of Registered Builders of Nigeria	Building
Professor	AMUBODE	Adetoun A.	Federal University of Agriculture, Abeokuta	Clothing and Textile Design
Professor	AHMED	Maigari Ibrahim	Bayero University, Kano	Environmental Management
Professor	MADUEME	Stella	University of Nigeria, Nsukka	Environmental Standards
Professor	KAKULU	Iyenemi Ibimina	Rivers State University, Port Harcourt	Estate Management
Professor	GWARI	William	Ahmadu Bello University, Zaria	Fashion Design
Professor	OKPE	Tonie	Ahmadu Bello University, Zaria	Fine and Applied Arts
Professor	ONUZULIKE	Ozioma	University of Nigeria, Nsukka	Fine and Applied Arts
Professor	UGIOMOH	Frank	University of Port Harcourt	Fine and Applied Arts
Professor	KUJE	Haruna Ayuba	Nassarawa State University, Keffi.	Geography
Professor	WURITKA	Enoch G.	Abubakar Tafawa Balewa University, Bauchi	Industrial Design
Professor	OGUNLADE	Benjamin A.	Ladoke Akintola University of Technology, Ogbomosho	Industrial Design

Assoc. Professor	UDEANI	Angela N.	Modibbo Adama University, Yola	Industrial Design
Professor	IDOWU	Timothy Oluwadare	Federal University of Technology, Akure	Surveying and Geoinformatics
Professor	AJE	Isaac	Federal University of Technology, Akure	Quantity Surveying
Professor	GASU	Martin	Osun State University	Urban and Regional Planning
Malam	SULEIMAN	Idris Dauda	Town Planners Registration Council of Nigeria	Urban and Regional Planning

List of NUC Representatives

Title	Surname	First Name	Programme
Mrs.	GARBA	Sarah	Discipline Representative, Environmental Standards, Fine & Applied Arts and Industrial Design
Mr.	AGABA	Benjamin	Building
Mr.	NYEMA	Chinda	Clothing & Textiles Design and Quantity Survey
Mrs.	OLORUNFEMI	Oluwatoyin	Environmental Management
Mr.	PARLONG	Kevin	Estate Management
Ms.	OKOKO	Chinasa Nkechi	Fashion Design
Ms.	EJIOFOR	Pamela	Geography
Mr.	MAITURARE	Yahaya	Survey and Geoinformatics
Mrs.	AGAGWUNCHA	Nkiruka	Urban & Regional Planning

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Introduction

Two Acts provide the legal framework for the quality assurance and regulatory mandates of the National Universities Commission. The first is the **National Universities Commission Act No. N81 Laws of Federation Nigeria (L.F.N.) 2004**.

*This Act sets up the National Universities Commission as a body corporate charged with the responsibility of advising the Federal and State Governments of all aspects of university education and the general development of universities in Nigeria. The second, **Education (National Minimum Standard and Establishment of Institutions) Act No. E3 L.F.N. 2004**, empowers the National Universities Commission to lay down minimum standards for all universities and other institutions of higher learning in the Federation and the accreditation of their degrees and other academic awards in formal consultation with the universities for that purpose, after obtaining prior approval therefor through the Minister, from the President.*

Following the enactment of NUC Act No. E3 L.F.N. 2004, the National Universities Commission developed the first set of Minimum Academic Standards (MAS) in 1989 for all the academic programmes existing in the Nigerian University System (NUS) at that time under the 13 major disciplines of Administration, Agriculture, Arts, Education, Engineering and Technology, Environmental Sciences, Law, Medicine and Dentistry, Management Sciences, Pharmaceutical Science, Science, Social Sciences and Veterinary Medicine. The Minimum Academic Standard served as the reference documents for the first accreditation of programmes conducted in NUS in 1990.

In its bid to review the Minimum Academic Standard documents, which was predicated on the fact that they were prescriptive, the Commission decided to develop the outcome-based Benchmark Statements for all programmes in the Nigerian University System in line with contemporary global practice in 1999. In the first comprehensive review of the Minimum Academic Standards by NUC, which was in 2004, the Commission decided to merge the Benchmark Statements and the revised Minimum Academic Standards into a new document called Benchmark Minimum Academic Standards (BMAS). These documents were approved for use in Nigerian universities in 2007. A second attempt at reviewing the BMAS was in 2011. It must however be noted that stand alone BMAS for new programmes were at different times developed by the Commission on request from some Nigerian universities.

The Current Review of the BMAS

The journey of the current curriculum review efforts commenced in 2018, when the National Universities Commission circulated the 2018 draft BMAS to all Nigerian universities and other stakeholders for their comments. In addition to the harvested comments, the curriculum of different programmes of some world-class universities were downloaded. The draft 2018 BMAS, compiled comments of Nigerian universities and other stakeholders and the downloaded curriculum of some foreign universities served as the working documents for the curriculum review panels. A multi-stakeholder approach was deployed in constituting the panels for the curriculum review exercise. The constituted panels included:

- i. Academic staff of Nigerian universities;
- ii. Representatives of the Academies;
- iii. Representatives of Professional bodies/associations
- iv. Representatives of the private sector

In addition to the reviewers working individually and in consultation with their subject area peers, over 512 cumulative online meetings of the general assembly (Vice-Chancellors, Discipline Chairmen/Chairpersons, programme-specific reviewers and Heads/representatives of international quality assurance agencies and institutions); Discipline groups; and programme groups were held between March and November, 2021. Physical meetings were also held to finalize the curriculum review exercise.

The reviewers carried out their assignments with a view to producing a curriculum for their respective programmes that will reflect both national and international expectations. Specifically, the reviewers focused on ensuring that the emerging curriculum will be adequate to train Nigerian university students in the 21st Century. By implication and in addition to current trends in the various programmatic areas, the curriculum will be ICT oriented, promote Artificial Intelligence, enhance skills acquisition (including soft skills), inculcate and sharpen entrepreneurship mindset of students and capable of steering the deployment of evolving technologies to deliver its content.

The Core Curriculum and Minimum Academic Standards (CCMAS)

The major highlights of the new curriculum are:

1. Change of nomenclature from **Benchmarks Minimum Academic Standards (BMAS)** to **Core Curriculum and Minimum Academic Standards (CCMAS)**;
2. The curriculum provides for 70% minimum core courses requirements for graduation. Nigerian universities are expected to provide the remaining 30%;
3. In consonance with global best practice, the curriculum is to stimulate blended learning in its delivery;
4. Mass Communication has been unbundled to create a distinct discipline of Communications comprising degree programmes in Advertising, Broadcasting, Development Communication Studies, Film and Multimedia, Information and Media Studies, Journalism and Media Studies, Mass Communication, Public Relations and Strategic Communication;
5. Agriculture has been unbundled into programmes in its contributing components of B.Sc Agricultural Economics, B.Sc. Animal Science, B.Sc. Crop Science and B.Sc. Soil Science;
6. The unbundling of Architecture and introduction of Architecture as a new discipline with programmes like Architecture, Architectural Technology, Furniture Design, Interior Architecture Design, Landscape Architecture and Naval architecture;
7. The split of the Basic Medical Sciences discipline into two – Basic Medical Sciences and Allied Health Sciences;
8. Reduction of the General Studies (GST) course from 36 credit units to 12 credit units of 6 courses as follows:
 - i. Communication in English;
 - ii. Nigerian People and Culture;
 - iii. Philosophy, Logic and Human Existence;
 - iv. Entrepreneurship and Innovation;
 - v. Venture creation; and
 - vi. Peace and Conflict resolution.
9. Entrepreneurship has been repackaged with the introduction of programme-specific entrepreneurship;
10. The number of academic disciplines has been increased from 14 to 17 as follows:
 - i. Administration and Management
 - ii. Agriculture
 - iii. Allied Health Sciences

- iv. Architecture
- v. Arts
- vi. Basic Medical Sciences
- vii. Communications and Media Studies
- viii. Computing
- ix. Education
- x. Engineering and Technology
- xi. Environmental Sciences
- xii. Law
- xiii. Medicine and Dentistry
- xiv. Pharmaceutical Science
- xv. Sciences
- xvi. Social Sciences
- xvii. Veterinary Medicine

Having reviewed the curriculum of Nigerian universities, the next steps will include training and retraining of academic staff of Nigerian universities to effectively deliver the content of the curriculum.

Glossary of Course Codes

These are the three letter codes for the identification of courses offered in the various programmes in the Environmental Sciences discipline as well as covered in the CCMAS for the Nigerian University System. They are in two categories dictated by the sources of courses involved.

Category A: Course codes for the general courses offered by all students registered in the various programmes in the Environmental Science discipline.

Category B: Course codes for courses offered by the various programmes in the Environmental Science discipline

Category C: Course code for other courses offered by the various programmes in the other disciplines outside the Environmental Science Discipline.

Category A

The Programme offering the Courses	Course Code
General Studies Courses offered at the University Level for students registered for courses in all the disciplines in the university.	GST

Category B

The Programme offering the Courses	Course Code
Building	BUD
Clothing and Textile	CLT
Estate Management	ESM
Environmental Management	EVM
Environmental Standards	EVS
Fashion Design	FAD

Fine Arts	FAA
Geography	GEO
Industrial Design	IDD
Quantity Surveying	QTS
Surveying and Geoinformatics	SVG
Urban and Regional Planning	URP

Category C

The Programme offering the Courses	Course Code
Accounting Programme in the Administration and Management Science Discipline	ACC
Biology/Biological Science in the Science Discipline	BIO
Botany Programme in the Science Discipline	BOT
Business Administration Programme in the Administration and Management Science Discipline	BUS
Chemistry Programme in the Science Discipline	CHM
Civil Law in the Law Discipline	CIL
Economics Programme in the Social Science Discipline	ECO
Geology Programme in the Science Discipline	GLY
Microbiology Programme in the Science Discipline	MCB
Mathematics Programme in the Science Discipline	MTH
Physics Programme in the Science Discipline	PHY
Property Law in the Law Discipline	PPL
Sociology Programme in the Social Science Discipline	SOC
Statistics Programme in the Science Discipline	STA
Theatre Arts Programme in the Arts Discipline	THA

Preamble

The Core Curriculum Minimum Academic Standards (CCMAS) document for the Environmental Sciences provides a description and the general characteristics of the first-degree programmes in the Environmental Sciences. It articulates the core areas of knowledge, understanding and skills expected of graduates from environmental science programmes in Nigerian Universities.

The Core Curriculum Minimum Academic Standards CCMAS statement takes into consideration, current development in the environmental design disciplines in general. New concerns about the changing environment as well as the need for life-long skills and 'market-ready' graduates have suggested the introduction of new courses in the undergraduate programme. The benchmark statements are intended to provide a broad framework within which educators can develop appropriate and challenging programmes that respond to the needs of the student, changing nature of the environment, as well as new developments in the society and technology. They seek to articulate the primary qualities expected of Bachelor's degree graduates and to maintain the standards of education in the environmental sciences subject area.

The purpose of the Core Curriculum Minimum Academic Standards (CCMAS) Statement is to:

1. Assist the Nigerian University System in the designing, approval and accreditation of programmes of study.
2. Assist professional bodies in their accreditation and review of programmes relating to professional competence.
3. Assist Students, Employers and internal Organisations seeking information about education in the Environmental Sciences discipline.

The Core Curriculum Minimum Academic Standards (CCMAS) statement is made up of four major components as follows:

1. The objectives and purpose of the bachelor degree in different programmes
2. The competencies, abilities and skills expected of a graduate of the different programmes.
3. Assessment procedures and criteria for evaluating the body of knowledge covered and different levels of abilities and skills attained.
4. The essential courses expected to be covered in the programme leading to the award of undergraduate and professional postgraduate degrees

Programmes and Degrees

Table 1.1 below includes a list of programmes and the degrees in view covered in the current CCMAS document for Environmental Sciences.

List of Programme(s) and Degree(s) in View

S/N	PROGRAMME	DEGREE(S) IN VIEW
1.	Building	B.Sc./B. Tech.
2.	Environmental Management	B.Sc. /B. Tech.
3.	Clothing and Textile Design	B.A./B.Sc.
4.	Environmental Standards	B.Sc./B. Tech
5.	Estate Management	B.Sc./B. Tech.
6.	Fine and Applied Arts	B.A/B.Sc.
7.	Fashion Design	B. A/B.Sc.
8.	Geography	B.Sc./B.Tech.
9.	Industrial Design	B. A/B.Sc./B. Tech.
10.	Quantity Surveying	B.Sc./B. Tech.
11.	Surveying and Geoinformatics	B.Sc./B. Tech.
12.	Urban and Regional Planning	B.Sc./B. Tech./B.URP.

Philosophy, Aim and Objectives of the Discipline

Philosophy

Environmental Sciences deal with the conceptual foregrounding of the nature of the environment and how natural and human agencies and activities renovate and reinvent the environment including visual constructs, cultural identities and symbolisms. These include planning, conceptualisations, design options and possibilities, construction, management and conservation of human-made and natural environments. The disciplines that constitute the environmental sciences are concerned with a visual world order that is sustainable. These include environmental signposts functionally appropriate, fitting and pleasing for purpose, aesthetically adequate, culturally relevant, environmentally sustainable, and at the same time, economically expedient considering the needed consideration for a balanced eco-system. Notwithstanding the above, each programme comes to view with its detailed rationale considering its uniqueness within this collective umbrella.

Aim

To produce competent graduates equipped with necessary theoretical knowledge, congruent skills and ability to provide conceptually grounded and compatible design options, iconographies and symbolisms for a sustainable global ecological order in their future work experience

Objectives

1. To expose the students to the objectives of the environmental design disciplines and their unique offer in providing for the cultural necessities that the consequences of interaction and commerce with the environment implicate.
2. Provide commensurate learning environments that allow students the opportunity to realize their creative potentials and training objectives
3. Enable students develop skills of reflection, critical thinking and analysis, communication acuity and the capacity for independent and team work/project collaborations
4. To expose students to temporal and spatial scales of environmental challenges and the various approaches and options for remediation, adaptation and mitigation
5. To simulate and provide design challenges to ingrain design and work ethic while fostering conceptual development and challenges.
6. To expose the students to industrial work experience
7. To provide the rationale for design valuation, appreciation, evaluation and management
Students should possess:
 - Proficiency in written and oral communication skills;
 - problem-solving skills, relating to both qualitative and quantitative information, especially where information is limited;
 - computational and numerical skills;
 - information-retrieval skills, in relation to primary and secondary information sources, including information retrieval through on-line computer searches;
 - information technology skills such as word processing and spreadsheet use, data-logging and storage and Internet communication;
 - interpersonal skills relating to working in multi-disciplinary teams;
 - time-management and organizational skills; and
 - study skills needed for continuing professional development and research

General Admission Requirements

Candidates may be admitted into the degree programmes through any of the following entry modes:

1. Unified Tertiary Matriculation Examinations (UTME) admissions
2. Direct Entry admissions

UTME Entry Mode

Candidates who have successfully completed the Senior Secondary School or its equivalent and obtained five credits (in not more than two attempts) in English Language, Mathematics, and any other three relevant subjects to the programme of choice will be eligible for admission currently through the Unified Tertiary Matriculation Examinations (UTME)

Direct Entry Admission Mode

Candidates who fulfil the requirements for UTME admission and who have obtained General Certificate of Education (GCE), Advanced Level; Higher School Certificate (HSC)/Interim Joint Matriculation Board (IJMB), National Diploma (ND) or other approved equivalent qualifications by Federal Ministry of Education in two relevant subjects to a particular programme, at a sitting, may be admitted into the 200 level

Duration of the Programme

Degree programmes in Environmental Sciences shall normally be for a minimum of eight (8) or ten (10) academic semesters for UTME entry mode students and six (6) or eight (8) academic semesters for Direct Entry admission candidates. Further details of programme duration are available in the statements for the different programmes in the current BMAS. All environmental sciences programmes should last for five (5) years

Graduation Requirements

Course Credit System

Academic work in the Environmental Sciences is organized in concentrated modules of subject materials referred to as courses. Each course is planned as a complete unit of study with a scheduled number of instructional/contact hours each semester.

Credits are weights attached to a course. One credit is equivalent to one hour per week per semester of 15 weeks of lectures or three hours of laboratory/studio/workshop work per week per semester of 15 weeks

Course System

This should be understood to mean a quantitative system of organization of the curriculum in which subject areas are broken down into unit courses which are examinable and for which students earn credit(s) if passed. The courses are arranged in progressive order of complexity or in levels of academic progress, e.g., Level or year I courses are 100, 101 etc and Level II or year II courses are 200, 202 etc.

The second aspect of the system is that courses are assigned weights allied to Units.

Units

Consist of specified number of student-teacher contact hours per week per semester. Units are used in two complementary ways: one, as a measure of course weighting, and the other, as an indicator of student work load.

1. As a measure of course, weighting for each Unit course (such as HIS 105, ZOO 203), the credit unit to be earned for satisfactorily completing the course is specified; e.g., a 2-credit unit course may mean two 1-hour lecture per week per semester or one 1-hour lecture plus 3-hour practical per week per semester.
2. As a measure of work load, "One Credit Unit" means one hour of lecture or one hour of tutorial per week per semester. For other forms of teaching requiring student teacher contact, the following equivalents may apply:
 - two hours of seminar;
 - three hours of laboratory or field work, Clinical practice/practicum, studio practice or stadium sporting activity;

- six hours of teaching practice; and
- four weeks of industrial attachment where applicable.

Normally, in Course Credit System, courses are mounted all year round, thus enabling students to participate in examinations in which they are unsuccessful or unable to participate on account of ill health or for other genuine reasons. In such a system, no special provisions are made for re-sit examinations.

The minimum number of credit units for the award of a degree is 120 and 150 units, respectively for four (4) year and five (5) year Programme, subject to the usual Department and Faculty requirements. A student shall therefore qualify for the award of a degree when he has met the conditions.

The minimum credit load per semester is 15 credit units.

For the purpose of calculating a student's cumulative GPA(CGPA) in order to determine the class of Degree to be awarded, grades obtained in **ALL** the courses whether compulsory or optional and whether passed or failed must be included in the computation.

Even when a student repeats the same course once or more before passing it or substitutes another course for a failed optional course, grades scored at each and all attempts shall be included in the computation of the GPA. Pre - requisite courses must be taken and passed before a particular course at a higher level.

Standard Terminologies

The following standard terminologies are used for different categories of courses.

1. Core/Compulsory Course:

A course which every student must compulsorily take and pass in any particular programme at a particular level of study.

2. Elective Course

A course that students take within or outside the faculty. Students may graduate without passing the course provided the minimum credit unit for the course had been attained.

3. Optional Course

A course which students can take based on interest and may count towards the minimum credit unit required for graduation.

4. Pre-requisite Course

A course which student must take and pass before taking a particular course at a higher level.

5. Required Course

A course that you take at a level of study and must be passed before graduation.

Grading of Courses

At the end of each course, a grade comprising a percentage score and a corresponding letter grade is awarded to each student. These grades will include the results of both formative and summative assessments conducted throughout the Programme duration. Range of percentage scores, letter grades and numerical grade point equivalents are indicated in the Table: 1.2 below:

Grading of Courses

Grading of courses shall be done by a combination of percentage marks and letter grades translated into a graduated system of Grade Point as shown in Table 1.2.

Table 1. 2 Grade Point System

Mark %	Letter Grade	Grade Point
70 – 100	A	5
60 – 69	B	4
50 – 59	C	3
45 – 49	D	2
40 – 44	E	1
0- 39	F	0

Grade Point Average and Cumulative Grade Point Average

For the purpose of determining a student's standing at the end of every semester, the Grade Point Average (GPA) system shall be used. The GPA is computed by dividing the total number of Units x Grade Point (TUGP) by the total number of units (TNU) for all the courses taken in the semester as illustrated in Table 1.3.

The Cumulative Grade Point Average (CGPA) over a period of semesters is calculated in the same manner as the GPA by using the grade points of all the courses taken during the period.

Table 1:3 Calculation of GPA or CGPA

Course	Units	Grade Point	Units x Grade Point (UGP)
C ₁	U ₁	GP ₁	U ₁ x GP ₁
C ₂	U ₂	GP ₂	U ₂ x GP ₂
-	-	-	-
-	-	-	-
C _i	U _i	GP _i	U _i x GP _i
-	-	-	-
-	-	-	-
C _N	U _N	GP _N	U _N x GP _N
TOTAL	TNU		TUGP

$$TNU = \sum_{i=1}^N U_i \quad TUGP = \sum_{i=1}^N U_i * GP_i \quad CGPA = \frac{TUGP}{TNU}$$

Degree Classifications

Classes of degree are to be awarded depending on the cumulative GPA obtained. The classes of degrees that may be awarded are First Class Honours, Second Class Honours (Upper Division), Second Class Honours (Lower Division) and Third Class Honours (see Table 1.4).

Table 1.4: Degree Classification

CGPA	Class of Degree
4.50 – 5.00	First Class Honours

3.50 – 4.49	Second Class Honours (Upper Division)
2.40 – 3.49	Second Class Honours (Lower Division)
1.50 – 2.39	Third Class Honours
1.00 – 1.49	Pass

Probation

Probation is a status granted to a student whose academic performance fall below an acceptable standard. A student whose Cumulative Grade Point Average is below 1.00 at the end of a particular year of study, earns a period of probation for one academic session.

Withdrawal

A candidate whose Cumulative Grade Point Average is below 1.00 at the end of a particular period of probation should be required to withdraw from the University. Where possible, consideration may be given to a student withdrawn from a programme of study for transfer to any other programme within the same university. Subject to the conditions for withdrawal and probation, a student may be allowed to repeat the failed course Unit(s) at the next available opportunity, provided that the total number of credit units carried during that semester does not exceed 24, and the Grade Points earned at all attempts shall count towards the CGPA.

Techniques for Student Evaluation

The primary goal of assessment is to improve the overall quality of learning as well as evaluate the quality of instruction. It is recommended that different types of formative and summative evaluation methods be adopted through the semester for all course offered in the environmental science discipline. The list below though not exhaustive, highlights some of the more common methods of assessment that may be adopted for students' courses performance evaluation:

1. Problem Solving Exercises
2. Term Papers/Essay Assignments
3. Individual Project Work
4. Oral Presentations
5. Design studio exercises
6. Surveys and Evaluation reports
7. Laboratory Reports
8. Collaborative Project Work
9. Report on External Placement (SIWES)
10. End of semester examinations
11. External Examination Reports

Assessment of theory subjects

Assessment used for theory subjects should include continuous monitoring of student's progress by subject lectures through course work evaluation. Continuous assessment may involve class tests, tutorial assignments, seminar presentations, and reports on fieldwork, class attendance and so on. These should carry between 30% and 60% of the total weighting for any subject. The final end of semester examination will normally account for the balance of 40% to 70% of the overall marks for the subjects.

Assessment of Studio projects

The regular formative review of design studio projects is encouraged as an important part of the learning process. Students are required to present their work to an audience that may comprise fellow students, studio staff or visiting studio critics at least at the end of each project. Feedback and scores may be given in these instances. The summative assessment of the design studio work is usually carried out by well-informed assessors based on predetermined assessment criteria. Scores in these assessments are usually very subjective and rely on the judgements of the expert assessors. Studio scores should now be 60% for CA and 40% for exams

External Examiners' System

The involvement of external examiners from other universities is a crucial quality assurance requirement for all courses in Nigerian University System. In this regard, external examiner should go beyond mere moderation of examination questions to examining of examination papers to scope and depth of examination questions vis a vis the curricular expectation.

SIWES Rating and Assessment

Environmental Science students shall be exposed to a combination of field and office experience both in the public or private sectors relevant to their various disciplines. This is achieved through the students' participation in the supervised Student Industrial Work Experience Scheme (SIWES). SIWES shall be undertaken in an approved establishment. A minimum period of 24 weeks of SIWES should be undertaken as part of the graduation requirements.

At the end of the SIWES programme, each participating students' is required to submit a systematic log-book for assessment by the programme in addition to undergoing any other forms of assessment as may be required by individual programmes and institutions. Individual programmes will be expected to allocate credit unit ratings to the SIWES training programme that count towards the requirements for graduation. Students with unsatisfactory performance in SIWES shall be required to repeat the training programme.

Students' Evaluation of courses

As an integral part of the course credit system, students will be given the opportunity to evaluate the courses taken in the semester based on the following criteria:

1. Course relevance
2. Adequacy in terms of time and content coverage
3. Students understanding of the courses
4. Adequacy of Teaching, tutorials and practicals technology/aids
5. Instructor evaluation

The students' course evaluation is aimed at improving the efficiency of course delivery by offering timely feedback to the course lecturers/instructors. It is expected that each programme will work out a mechanism to achieve this goal.

Maintenance of Curricula Relevance

The various curricula for Environmental Sciences should be reviewed regularly as reflected in each individual programme. It is recommended that general reviews be conducted at least once every five (5) years, in full consultation with the relevant professional bodies.

One of the well-established modes for maintaining programme and curricula relevance is through accreditation exercises. The detailed procedures for programme validation and accreditation may be found in relevant sections of programme accreditation guidelines for the various professional bodies.

The general performance indicators useful for programme accreditation and for internal programme reviews are as specified in individual programmes in terms of the following:

1. Programme content and delivery.
2. Staff composition and quality.
3. Student admissions, retention and graduation.
4. Available Facilities: spaces and equipment.
5. Employer's ratings of graduates.
6. Overall programme administration.

Performance Evaluation Criteria

The accreditation of the Engineering and Technology degree programme means a system of recognising educational institutions (universities and programmes offered by them) for a level of performance, integrity and quality which entitles them to the confidence of the educational and professional community, the public they serve, and employers of labour.

The objectives of the accreditation exercise are to:

1. Ensure that at least the provisions of the minimum academic benchmark statements are attained, maintained and enhanced.
2. Assure employers and other members of the community that graduates of these institutions have attained an acceptable level of competence in their areas of specialisation.
3. Certify to the international community that the programmes offered in these universities are of high standards and that their graduates are adequate for employment and for further studies.

B.Sc./B. Tech. Building

Overview

The Building Programmes curriculum provide general guidance for articulating the nature and characteristics of the programme but are not a specification of a detailed curriculum in the subject. They allow for diversity and flexibility in the design of programmes and encourage institutions to improve within an agreed overall framework. The degree envisaged might be a B.Sc. or a B. Tech in Building depending on the nature of the University where the programme is offered.

Philosophy

The thinking underlying training in Building programme is to develop and advance the science, technology, practices and management of construction, operation, maintenance and deconstruction of buildings. The programme exposes students to cutting edge skills in building assembly/construction techniques, building construction and maintenance processes such as site management, financial management, building production and maintenance management,

building structures, building development and redevelopment, materials production and usage. The graduates of the programme are expected to play a leading role in solving national problems and advancing Nigeria technologically through innovations in building techniques, processes and management. In essence, the building graduate will, among other things, receive training in the science and technology of building, as well as in creative and knowledgeable approach to the managerial functions needed to define, assemble, coordinate and control the technological, economic, human and material resources involved in building production, maintenance and deconstruction processes.

The Building programme requires diverse skills and is concerned with the provision and analysis of information for a variety of decision-making and resource allocation purposes relating to the built environment and improvements of it. It involves courses in building assembly/construction techniques, construction building process in the areas of management, contract management, financial management, building development, redevelopment and maintenance as well as the solution of related multifaceted problems.

Objectives

The specific objectives of the programme are to:

1. produce graduates with competence in the science, technology and management of building production, maintenance, deconstruction and with generalized knowledge of information and computer technology (ICT) as well as other allied professions to be able to relate effectively well in the building delivery process and integrate and translate disparate inputs of other construction industry professionals to the actual production of the building;
2. enable the student develop his/her intellectual, analytical and critical abilities in order to control the technological, economic, human and material resources involved in the building production, maintenance and deconstruction process;
3. equip the students with the ability to locate, extract and analyse, translate, integrate and use data from multiple sources such as drawings and other contract documents including capacity to comprehend the environmental, social, economic and technological contexts underlying design and construction in the built environment;
4. produce value-driven and entrepreneurially sound graduates who are both technically competent and socially responsible to the society for the safety of men and structures both at the construction stages and during the eventual use of the building through emphasis on health and safety, quality management and economy in the process and methodology of building production;
5. produce graduates who will acquire skills and consequently render specialized services in any or some of the focal areas of the building profession such as building production management, maintenance management, condition survey, construction planning, construction methodology, project health and safety, and project quality management; and
6. to produce graduates who can advance postgraduate research in all aspects of building which include construction management, building maintenance management, building structures, construction technology and building services.

Employability skills

The new curriculum when applied effectively will equip Building graduates with necessary skills to work in public and private sectors of the contemporary digital world (nationally and internationally) in an innovative manner.

When the graduates become professionally licensed, they are recognized by Nigerian law as Builders employable in Public Sector Organizations as Construction/Building Production Managers, Construction Technology Expert/Adviser, Project Managers, Project Builder, Client's Representative, Maintenance Officer/Manager, Construction Planning Manager, Building Project Health and Safety Manager. The graduate/builder can also work in any of client, consulting or contracting organizations.

The registered builder can also establish his own organization for contracting or consulting purposes and in the process promote entrepreneurship. Other areas of employability or entrepreneurship include materials research, development and marketing. There are many more. The building graduate and registered builder has employability opportunities at all stages right from the design, planning, preconstruction stages, to the construction and post construction stages and in essence throughout the useful life of the building and can add unprecedented values in organizations in the project value chain.

21st Century Skills

1. Critical thinking
2. Creativity
3. Collaboration
4. Communication
5. Information literacy
6. Media literacy
7. Technology literacy
8. Flexibility
9. Leadership
10. Initiative
11. Productivity
12. Social skills

Practical Skills

General Skills

Written and oral communication skills;

Information technology skills;

1. information retrieval skills in relation to primary and secondary sources including information retrieval through on-line computer search internet, emails;
2. inter personal skills - ability to engage in team work;
3. qualitative and quantitative problem-solving skills;
4. time – management; and
5. study skills needed for continuing professional development (CPD).

Graduates exhibit the following specific attributes, which are ability to:

1. discharge responsibilities to the client or employer with full consideration to the public and building profession interest as consultants and construction managers;
2. uphold the dignity, standing and reputation of the profession in accordance with the code of Professional conduct;
3. keep confidential information confidential;
4. give fair and unbiased advice;
5. be free from corruption;
6. apply professional skills and integrity acquired for the good of the society; and
7. to apply skills to deal with the new thoughts and development in the building industry.

Unique Features of the Programme

1. The integration of skills content in the practical modules, which will enable graduates to function in the ever-changing digital world.
2. The provision opportunities for National Skills Qualification Framework to be exposed to the students at higher level of training.
3. The introduction of the application Building Information Modelling (BIM) tools and Robotics in the design, execution and management of building projects is innovative.
4. The curriculum also has new courses introduced, which will afford the students a wider area of specialization in focus in preparation for postgraduate trainings.

Admission and Graduation Requirements

Admission Requirements

Admission into Building Programme may be through any of the following modes:

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Physics, Chemistry and one other subjects from the following list will be eligible for admission currently through the Unified Tertiary Matriculation Examinations (UTME); Building Construction, Land Surveying, Fine Arts, Technical Drawing, Economics, Geography, and Biology.

Direct Entry Admission: A candidate who fulfils normal admission requirements above and in addition holds an HSC, GCE Advanced Level, IJMB, JUPEB and or a National Diploma (ND) with

lower credit in Building, Civil Engineering or related disciplines may be admitted into the 200 level of the programme. In addition, holders of Higher National Diploma (HND) in Building, Civil Engineering or similar related qualifications with upper credit may be placed at 300 level of study. Taking appropriate courses may rectify any deficiencies in a candidate's background.

Graduation Requirements

Total minimum credit required for graduation is 150, 120 and 90 for students admitted through UTME, ND/HSC/GCE Advanced Level/IJMB/JUPEB (direct Entry) and HND (direct entry) modes respectively. Candidates must pass all the compulsory courses to be awarded an honours degree. The minimum recommended duration of the Building degree programme is ten (10) academic semesters for UTME entry mode students, eight (8) academic semesters for 200LEVEL direct entry and six (6) semesters for HND direct entry admission candidates. The maximum programme duration is fifteen (15) semesters for UTME, twelve (12) semesters for 200 Level direct entry and nine (9) semesters for 300 Level direct entry candidates respectively.

Global Course Structure

100 Level

Course Code	Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
MTH 101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary; Mathematics II	2	C	30	-
PHY 101	General Physics I	2	C	30	45
PHY 102	General Physics II	2	C	15	45
BUD 101	Introduction to Building I	2	C	30	-
BUD 104	Building Graphics, Lettering and Modelling I	2	C	-	90
BUD 122	Building Construction and Material I	2	C	15	45
BUD 142	Principles of Economics for Builders	2	C	30	-
	Total	21			

200 Level

Course Code	Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and human existence	2	C	30	
ENT 211	Entrepreneurship and innovation	2	C	15	45
BUD 211	Mechanics/Strength of materials I (Statics)	2	C	15	45
BUD 221	Building Construction & Materials II	2	C	15	45
BUD 251	Computer Application for Building Construction	2	C	15	45

BUD 291	Workshop Practice I	2	C	-	90
BUD 271	Principles of Measurements & Description I	2	C	15	45
BUD 222	Building Construction and Materials III	3	C	30	45
BUD 272	Principles of Measurement and Description II	2	C	15	45
BUD 292	Workshop Practice II	2	C	-	90
	Total	21			

300 Level

Course Code	Title	Units	Status	LH	PH
ENT 312	Venture Creation	2	C	15	45
GST 312	Peace and Conflict Resolution	2	C	30	
BUD321	Construction Technology I	2	C	15	45
BUD331	Building Maintenance, I	2	C	15	45
BUD341	Building Services and Equipment I	2	C	15	45
BUD371	Principles of Construction Management	2	C	30	-
BUD 312	Reinforced Concrete Design I	2	C	15	45
BUD322	Construction Technology II	2	C	15	45
BUD332	Building Maintenance II	2	C	15	45
BUD342	Building Services/Equipment Installation II	2	C	15	45
BUD376	Construction Planning, Methodology and Programming for Builders	2	C	15	45
	Total	22			

400 Level

Course code	Title	Units	Status	LH	PH
BUD 411	Reinforced Concrete Design II	2	C	15	45
BUD 413	Integrated Studio Work	2	C	-	90
BUD 431	Construction Plant & Equipment	2	C	15	45
BUD 451	Quality Management for Building	2	C	15	45
BUD 471	Building Economics and Cost planning	2	C	30	-
BUD 481	Concrete Technology for Building and Infrastructure Works	2	C	15	45
BUD 491	Operations Research	2	C	30	-
BUD 402	SIWES	15	C	-	675
	Total	29			

500 Level

Course Code	Title	Units	Status	LH	PH
BUD 512	Design of Steel Structures	2	C	15	45
BUD 521	Advanced Construction Technology I	2	C	15	45
BUD 522	Advance Construction Technology II	2	C	15	45
BUD 552	Contract Administration	2	C	30	-
BUD 571	Project Management I	2	C	30	-
BUD 572	Project Management II	2	C	30	-
BUD 591	Project Reports I	3	C	-	-
BUD 592	Project Report II	3	C	-	-
BUD 593	Building Information Modelling & Robotics I	2	C	15	45
BUD 594	Building Information Modelling & Robotics II	2	C	15	45
	Total	22			

Course Contents and Learning Outcomes

100 Level

GST 111: Communication in English (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). English Sentences (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing, writing, post writing, editing and proofreading; Brainstorming, outlining, paragraphing, types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making. Mechanics of writing). Comprehension Strategies: (Reading and types of reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies.

Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. analyse the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry)

(2

Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus)

(2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes.

Course Contents
Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

COS 101: Introduction to Computing Sciences

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic components of computers and other computing devices;
2. describe the various applications of computers;
3. explain information processing and its roles in the society;
4. describe the Internet, its various applications and its impact;
5. explain the different areas of the computing discipline and its specializations; and
6. demonstrate practical skills on using computers and the internet.

Course Contents

Brief history of computing. Description of the basic components of a computer/computing device. Input/ Output devices and peripherals. Hardware, software and human ware. Diverse and growing computer/digital applications. Information processing and its roles in society. The Internet, its applications and its impact on the world today. The different areas/programs of the computing discipline. The job specializations for computing professionals. The future of computing.

Lab Work: Practical demonstration of the basic parts of a computer. Illustration of different operating systems of different computing devices including desktops, laptops, tablets, smart boards and smart phones. Demonstration of commonly used applications such as word processors, spreadsheets, presentation software and graphics. Illustration of input and output devices including printers, scanners, projectors and smartboards. Practical demonstration of the Internet and its various applications. Illustration of browsers and search engines. How to access online resources.

PHY 101: General Physics I (Mechanics)**(2 Units C: LH 30)****Learning Outcomes**

On Completion, the Student should be able to;

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum;
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time; units and dimension, vectors and scalars, differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton laws of motion (Inertial frames, Impulse, force and action at a distance, momentum conservation); Relative motion; Application of Newtonian mechanics; Equations of motion; Conservation principles in physics, conservative forces, conservation of linear momentum, Kinetic energy and work, Potential energy, System of particles, Centre of mass; Rotational motion; Torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; Circular motion; Moments of inertia, gyroscopes and precession; Gravitation: Newton's Law of Gravitation, Kepler's Laws of Planetary Motion, Gravitational Potential Energy, Escape velocity, satellites motion and orbits.

PHY 102: General Physics II**(2 Units C: LH 30)****Learning Outcomes**

On completion of this course, students should be able to:

1. explain the concepts of heat and temperature and relate the temperature scales;
2. derive, and apply the fundamental thermodynamic relations to thermal systems;
3. describe and explain the first and second laws of thermodynamics, and the concept of entropy;
4. state the assumptions of the kinetic theory and apply techniques of describing macroscopic behaviour;
5. deduce the formalism of thermodynamics and apply it to simple systems in thermal equilibrium; and
6. describe and determine the effect of forces and deformation of materials and surfaces.

Course Contents

Heat, temperature and temperature scales. Gas laws; general gas equation, thermal conductivity. First Law of thermodynamics, heat, work and internal energy. Reversibility, second law of thermodynamics, heat engines and entropy. Zero's law of thermodynamics, kinetic theory of gases, molecular collisions and mean free path. Elasticity, Hooke's law, Young's, shear and bulk moduli. Hydrostatics, pressure, buoyancy, Archimedes' principles. Bernoulli's equation and incompressible fluid flow. Surface tension, adhesion, cohesion, viscosity, capillarity, drops and bubbles.

CHM 101: General Chemistry I**(3 Units C: LH 45)****Learning Outcomes**

At the end of this Course, the Students should be able to:

1. define atom, molecules and chemical reactions;
2. discuss the Modern electronic theory of atoms;
3. write electronic configurations of elements on the periodic table;
4. rationalize the trends of atomic radii, ionization energies, electronegativity of the elements based on their position in the periodic table;
5. identify and balance oxidation – reduction equation and solve redox titration problems;
6. draw shapes of simple molecules and hybridized orbitals;
7. identify the characteristics of acids, bases and salts, and solve problems based on their quantitative relationship;
8. apply the principles of equilibrium to aqueous systems using LeChatelier's principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures;
9. analyse and perform calculations with the thermodynamic functions, enthalpy, entropy and free energy; and
10. determine rates of reactions and its dependence on concentration, time and temperature.

Course Contents

Atoms, molecules, elements and compounds and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization and shapes of simple molecules. Valence Forces; Structure of solids. Chemical equations and stoichiometry; Chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.

BUD 101: Introduction to Building I**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. define building as a structure, process and discipline;
2. discuss the history of building;
3. explain building profession; and
4. discuss the interrelationships among built environment professionals.

Course Contents

Overview of the building construction process and the building industry. The role of different stakeholders in the construction industry. Building as a structure, a process and a discipline. The history of building, its function and types; origin and growth of settlements, factors affecting settlements and its development, statutory and local authority requirement. Introduction to building profession and other related professions in the built environment such as Land Surveying and Geo-informatics, Urban and Regional Planning, Architecture, Quantity surveying, Estate Management, Civil, Mechanical and Electrical Engineering. Scope of duties, future prospects and roles of professionals in the construction industry.

BUD 102: Building and Architectural Science**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course, the students should be able to:

1. explain thermal comfort in buildings;
2. explain transmission and vibration in buildings;
3. identify and apply acoustic materials in buildings;
4. calculate reverberation time; and
5. carry out simple lighting design in buildings.

Course Contents

Introduction to building physics, thermal comfort, lighting, acoustics, heat transfer in buildings. Acoustics: nature of sound, sound pressure, intensity and power; the Decibel; Sound level meter and weighting scales; Transmission of sound and vibration in buildings; Transmission loss, Maximum acceptable noise levels; Means of noise and sound insulation; Room Acoustics – Room Acoustics criteria, acoustics principles, Geometric design techniques; Sound absorbents – Case studies of some acoustical buildings, Types of auditorium; Noise – Effects, noise limiting curves, hearing risk, construction site noise, noise control; Reflection, types of reflectors; panel, curve; echoes, Absorption, absorption coefficient, types of absorbers; porous, panel, cavity; Reverberation, reverberation time, calculation of reverberation time.

Light: Nature of light, Electromagnetic radiation, Elementary Physiology of the eye, accommodation, adaptation, colour sensitivity; Basic units of measurement – luminous flux, solid angle, luminous intensity, luminance; Behaviour of light on surfaces; Introduction to main criteria in lighting design – acuity, glare, modelling appearance and costs.

BUD 104: Building Graphics, Lettering and Modelling I**(2 Units C: PH 90)****Learning Outcomes**

At the end of this course, students should be able to:

1. identify and produce Architectural, Civil, Structural and electrical drawings;
2. apply freehand drawing in communication in building processes;
3. develop surfaces; and
4. differentiate between presentation and working drawings.

Course Contents

An introduction to and interpretation of architectural, civil, structural, and electrical drawings. Application of freehand sketches in graphic communication in building for construction details and sections, manual construction drafting, scaling, lettering, presentation and working drawings, standard scaling, development of simple surfaces, plotting loci, modelling, ellipse and other geometrical figures.

BUD 122: Building Construction and Materials I**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course, students should be able to:

1. state statutory and local authority requirements in building construction process;
2. prepare site for construction;

3. identify different types of engineering soils;
4. set out simple buildings;
5. classify and explain properties of building materials; and
6. explain types and production of cement, aggregates, water and concrete production.

Course Contents

Statutory and Local Authority requirements. Site preparation: Clearing of bushes, grubbing up roots, top vegetable soil excavation, reduced soil excavation, reduced level excavation, dewatering, extermination of termite nests. Types of engineering soils: Importance of soil investigation. Sequence of building operations. Setting out of a simple building, using builders square, 3-4-5 Method, and checking the accuracy of setting out.

Classification and properties of building materials, survey of current types of materials and methods used in building construction, concrete (cement, aggregate, water), timber, plastic and steel framing systems; masonry construction; interior and exterior finishes. Students are introduced to preliminary and basic construction processes in the construction of buildings. Types of foundation (strip, pile, pad and raft), functional requirements of foundations, trenching excavation and support, types and functional requirements of floors such as solid ground floor and raised timber ground floors.

BUD 142: Principles of Economics for Builders

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain general principles of economics;
2. state basic problems of resource allocation and modes of building components production;
3. explain methods of production; and
4. relate demand and supply in pricing and tendering processes.

Course Contents

An introduction to economics, its scope methodology and relationship to the building/construction industry. Supply and demand considerations, elasticity, GDP, the Nigerian financial system, money and banking regulations. General principles of economics (micro/macroeconomics). The basic problems of resource allocation and modes of production (building components). Factors of production and law of diminishing returns, methods of production, market structures (perfect competition, monopoly, and oligopoly), structure of the Nigerian economy (real sector, service sector), marketing and sales management, and Pricing methods (demand and supply, tendering procedures).

200 Level

GST 212: Philosophy, Logic and Human Existence

(2 Units C: LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;

4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic, the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211: Entrepreneurship and Innovation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

**BUD 201: Building Graphics, Lettering and Modelling II
90)**

(2 Units C: PH

Learning Outcomes

At the end of the course, the students should be able to:

1. explain different types of drawing;
2. draw different elevations and perspectives; and
3. make building models.

Course Contents

Architecture as concept. Architect as creator. Architectural design, components, stages, methodology. Methods of representation in architectural design, orthogonal representation. Types of drawing, composition architectural drawing, lettering Architectural perspective, types, composition of the image and methods of construction. Architectural form, emotional expressiveness, brightness, colour, fabric of form. Functional and spatial organization (interior and exterior). Tectonics, summary, unity of subordination, proportion. Modelling, computer applications and general presentation.

**BUD 211: Mechanics/Strength of Materials I (Statics)
15; PH 45)**

(2 Units C: LH

Learning Outcomes

At the end of this course, the students should be able to:

1. apply the principles of equilibrium on buildings;
2. determine the reactions at the supports of structures; and
3. calculate and sketch bending moments and shear force diagrams.

Course Contents

Definitions and concepts of building structures. Development of the techniques used in analysing, selecting, and designing statically determinate structural building elements including footings, retaining walls, slab systems, beams, columns, rigid frames, arches and trusses, and other types of walls. Units of measurements, force systems on a building and to prepare the students for structural analysis and design in the next levels. S.I. Units of forces, structural forms, classification and descriptions. Force systems, frame structures, stress analysis of simple beams, statically determinate frames/trusses, bents and knee structures. Free body diagrams, conventional supports and calculation of Reaction using analytical and graphical methods. Calculation and drawing of Bending moment and shear force diagrams. Newton's Laws of motion, friction, energy and deflection of beam.

BUD 221: Building Construction & Materials II

(2Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, the students should be able to:

1. classify and discuss further properties of contemporary building materials;
2. carry out various tests on cement, aggregates, water and fresh concrete;
3. identify and classify types of walls and their functional requirements;
4. explain methods of wall construction for various types;

5. identify and classify types of roofs and their functional requirements; and
6. select appropriate tools and equipment for wall and roof construction.

Course Contents

Classification and properties of contemporary building materials, tests on cement, aggregate, water, fresh concrete and contemporary building materials, types and functional requirements of walls such as bricks, blocks and stone masonry walls, methods of wall construction, types and functional requirements of roofs, parts of roof structure, materials for roof construction, types, methods and selection of tools and equipment for walls and roof construction.

BUD 261: Land Surveying I

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. discuss different methods and applications of land surveying to the building construction industry;
2. carry out levelling using levelling instruments;
3. carry out traversing using theodolite and compass; and
4. apply CAD, GPS and Land information systems in surveying of land areas.

Course Contents

Methods and applications of land surveying to the building construction industry. The various technologies employed by Professional Land Surveyors in accomplishing their work including levelling. Design and adjustment of surveying instruments, levelling, distant measurement, data collection. Theodolite and compass traversing, Computer-Aided Design (CAD), the Global Positioning System (GPS) and Land Information System (LIS).

BUD 262: Land Surveying II

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. apply different techniques and technologies in surveying;
2. operate common surveying instruments such as quickset, theodolite, total station, GPS; and
3. plot field survey data.

Course Contents

Application of different techniques and technologies in land surveying. The uses of common instruments like the quickset, theodolite, plotting of field survey data.

BUD 291: Workshop Practice I

(2 Units C: PH 90)

Learning Outcomes

At the end of the course, students should be able to identify:

1. wood workshop tools, equipment and under their uses and maintenance;
2. block laying and concreting tools, equipment and their uses;
3. plumbing tools, equipment and understanding their uses and maintenance;
4. Factory Acts and Safety Regulations applicable in workshops and construction sites;

5. construction of different types of bonds; and
6. good practical exercises which must be done by the students at various building workshops.

Course Contents

Uses and maintenance of Tools and equipment in carpentry/woodwork, concreting, plumbing workshop, Factory Acts and workshop and site safety, types bonding in block work.

BUD 271: Principles of Measurements & Description I PH 45)

(2 Units C: LH 15;

Learning Outcomes

At the end of the course, students should be able to:

1. describe mechanics of measuring building works;
2. discuss types and functions of bill of quantities; and
3. take-off, abstract, prepare and price bill of quantities.

Course Contents

Introduction into the mechanics of measuring building works, functions of bills of quantities, principles of measurement, taking-off, abstracting and billing.

BUD 221: Building Construction and Materials III

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of this course, the students should be able to:

1. explain ways of processing different building materials and concrete production;
2. carry out further tests on hardened concrete, asphalt, wood and masonry and contemporary building materials.
3. explain ways of processing different building materials;
4. discuss current building bye-laws;
5. explain types of doors and windows, their functional requirements and productions; and
6. carryout installation of simple doors and windows.

Course Contents

Detailed study of materials and their performance in construction. It will seek to increase the students' knowledge of the processing of different building materials, current byelaws, and issues of materials specification, builder's tools and equipment. Further tests on hardened concrete, asphalt, wood and masonry and contemporary materials; types of doors and windows, (timber, aluminium, steel, plastics), their fabrications and installation.

BUD 212: Mechanics/Strength of Materials II (Dynamics) 15; PH 45)

(2 Units C: LH

Learning Outcomes

At the end of this course, the students should be able to:

1. identify basic principles and techniques of structural design concepts;
2. describe factor of safety;
3. determine simple stress systems; and

4. draw Mohr's and Strain Cycles.

Course Contents

Introduction to building structural design concepts, principles and techniques, concepts and unit of measurements, simple stress systems such as direct stress (tensile and compressive), factor of safety, mechanical testing of materials, behaviours of steel under load, Complex stress systems such as oblique stress in two and three dimensions, Principal planes, Mohr's circles and Strain cycle; concept of failure; theory of pure bending, shear stress in beams, torsion of circular shafts, theory of plasticity.

BUD 251: Computer Application in Building Construction (2units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. identify various software programmes applied in building; and
2. apply various software programmes in building process.

Course Contents

History of computer and information technology developments; software in use in the construction industry –for design (AutoCAD, Revit); costing (WinQs) and project planning (Microsoft Project/Primavera); Microsoft Project/Primavera; Spread sheets. Students are expected to familiarize themselves with the use of the Computer Aided Design software and any of the project planning software such as Microsoft Project or Primavera.

BUD 272: Principles of Measurement & Description II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. carry out detailed measurement of buildings;
2. measure sub-structural works;
3. measure super-structural works; and
4. measure finishing and external works.

Course Contents

Practical examples of the measurements of building works:

-Work below ground level (GL). Superstructure works. Finishes. External works.

Apply computer software programmes and measurement and billing.

BUD 282: Soil Mechanics and Foundation I (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. apply basic soil mechanics principles in solving problems of earthwork and foundation engineering;
2. identify and classify soil with their properties;
3. determine bearing capacity of soils using different methods; and
4. carry out soil exploration using different investigation methods.

Course Contents

Basic principles of soil mechanics and their application to the solutions of problems in earthwork and foundation engineering. Soil moisture content, California Bearing Ratio – liquid and plastic limit.

Classification, identification, properties of soils, soil components, clay minerals, organic, volcanic and made-made solids

Grain size, particle shape -plasticity and the Atterberg limits.

Soil as a multiple phase system.

Seepage analysis, groundwater and soil moisture. Permeability tests, Graphical solution of seepage problems. The flow nets (Two-dimensional seepage analysis)

Consolidation. Bearing capacity of soils. Laboratory testing of liquid limit, plastic limit.

Special type of soil. Soil exploration.

BUD 292: Workshop Practice II (2 Units C: PH 90)

Learning Outcomes

At the end of the course, the students should be able to carry out:

1. practical works on carpentry and joinery;
2. practical works on concreting; and
3. practical works on plumbing piping and fittings.

Course Contents

Practical works in Carpentry, block work, Fitting work, concreting, interior and exterior finishes. Plumbing piping and installation of plumbing fitting.

300 Level

GST 312- Peace and Conflict Resolution (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes, Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders).

Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

BUD 321: Construction Technology I**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. identify and construct basic strip and raft foundations for simple buildings;
2. identify functional requirements of floors;
3. classify and construct different types of floors;
4. explain damp proof course and membranes and their installations; and
5. carry out stair construction.

Course Contents

The course presents a detailed study of current methods and equipment used in building domestic and small scale, simple construction projects. Studies of strip and raft foundation, walls in block work and brickwork, plain and reinforced concrete floors, pitched roof in timber and steel, purlins, roof covering, ceiling, finishing to walls, floors and ceiling, setting out buildings.

Floor: Functions of floor, construction requirements, types – solid ground floors, suspended ground floors; upper floors, construction details and practice, merits of different types of floors.

Damp-proof: Types, functions, materials used for damp-proof, tanking.

Simple roof: Design specifications and functional requirements, types, fixing details, treatment given to openings, door frames and lining; ironmongery.

External stair and staircases in buildings: Terminologies in staircases, function, types and methods of construction – setting out staircases, formwork for reinforced concrete, cast-in-situ staircases [the layout]; Ramps: construction and uses.

External works: Fence, gates, pavements, drains, landscape work and access roads.

BUD 331: Building Maintenance I**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, the students should be able to:

1. explain concept of maintenance management;
2. carry out structural surveys of buildings;
3. carry out alterations, conversions and improvement in buildings; and
4. identify and discuss causes of deteriorations in buildings.

Course Contents

This course will introduce students to the principles, theories and practices in building maintenance management. It may cover topics like building condition assessment, remediation actions, and maintenance types.

The course deals with building maintenance technology, decay of building-agencies involved, alterations, conversion, improvements in buildings, design defects and remedies, structural surveys of buildings, maintenance of all buildings, mechanical services.

**BUD 341: Building Services/ Equipment & Installation I
PH 45)****(2 Units C: LH 15;****Learning Outcomes**

At the end of the course, students should be able to:

1. design plumbing and drainage systems in buildings and its environment;
2. carry out electrical installations in buildings;
3. discuss sources of energy in buildings; and
4. discuss lateral and vertical movements in buildings.

Course Contents

Topics include the basic design principles and code requirements of plumbing and drainage systems; heating, ventilating and air-conditioning to control temperature, humidity and indoor air quality; heat and cooling calculations; and fire-protection systems.

Deals with electrical supply and installations in domestic, commercial and industrial buildings such as electrical generation and distribution.

Electrical wiring, different kinds of circuits and electrical layout plans,

Introduction and summary of main criteria in lighting design, activity, glare, modelling atmosphere, costs, behaviour and control of light, natural ventilations in buildings, mechanical ventilations, factors that determine their need. Thermodynamics systems. Lifts, escalators, hoists, telephones, metering, fire-fighting equipment and their installations.

BUD 311: Structural Analysis**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. apply fundamentals of static equilibrium in analysing beams, trusses and frames;
2. carry out analysis of framed structures by flexibility method;
3. apply stiffness method in analysing frame structures;
4. calculate and determine shear forces and bending moments by moment distribution method; and
5. apply slope deflection methods in frame analysis.

Course Contents

Fundamentals of static equilibrium are applied to the analysis of beams, trusses, and frames. Free bodies, shear and moment diagrams, and sectional area properties are covered.

Flexibility method: Basic concepts, member flexibility matrix and application to pin-jointed redundant truss, plane frame, continuous beam and space frame.

Stiffness Method: Basic concepts and formulation of the stiffness matrices, application to Pin-jointed redundant truss, plane frame, continuous beam and space frame.

Analysis of structures by the method of forces.

Programmes design/Analysis by software application.

Introduction: Structural forms, systems and elements, stability of structural systems, statically and kinematic indeterminacy.

Moment Distribution Method: Concepts and theories, application of the method to the analysis of continuous beam, frames with and without sway action.

Slope-Deflection Method: Concepts and theories, application to continuous beam, frames with and without sway action. Application of matrices to the slope-deflection method.

Lateral load analysis in High-rise Buildings Cantilever and Portal frame methods.

Finite element analysis, and yield line analysis.

BUD 333: Building Thermodynamics**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. define and explain basic concepts of thermodynamics; and
2. state laws of thermodynamics.

Course Contents

Definition of essential terms, general concepts and Laws of Thermodynamics especially with respect to building services and systems. Definition and basic concepts of thermodynamics – system concept, open and closed systems. Flow and non – flow pressures. State of a system, properties of a system. Temperature, work and heat – the cycle. The first law of thermodynamics: mechanical equivalent of heat, corollaries of the first law. Energy equation (of the first law) and reversibility; work and reversibility, heat and reversibility, constant volume process, constant pressure process, polytrophic process, adiabatic process, isothermal process.

The steady flow energy equation (of the first law); open systems with steady flow, nozzle and diffuser, turbine and compressor, throttling reciprocating compressor

The second law of thermodynamics; cycle efficiency, the Clausius statement of the second law.

BUD 361: Building Material Science**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. discuss the properties of more contemporary building materials;
2. carry out further tests on concrete, contemporary building materials; and
3. discuss case studies on contemporary building material.

Course Contents

This is a combination of theory and lab work dealing with the properties of more conventional and contemporary building materials and how they may be tested. Contemporary building materials are tested using standard procedures to establish design criteria, inspection and quality control programs. Case studies on contemporary building materials

BUD 371: Principles of Construction Management**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. define management and discuss functions of management;
2. discuss different approaches to management thoughts;
3. explain management theories and their practical applications; and
4. differentiate between management and leadership.

Course Contents

Introduction to management and functions of Managers in an organisation.

The evolution and approaches to management thoughts:

Classical Approaches: Systematic Management, Scientific Management, Bureaucracy, Administrative Management, Human Relations Management,

Contemporary Approaches: Quantitative Management, Organisational Behaviour, Systems Theory, Contingency Theory. Leadership and Management. Management levels and skills. Motivation and Motivation theories. Communication. An introduction to construction planning and scheduling (pre-contract, contract and post-contract, WBS, Organisation of interrelated events and activities, sequencing, timing, and resource allocation of activities bar charts).

BUD 381: Soil Mechanics and Foundations II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the courses the students should be able to:

1. carry out various tests on soil samples to determine level of compaction and consolidation; and
2. determine shear strength and bearing capacity of soils.

Course Contents

Study of the characteristics and behaviour of soil as it relates to the design and construction of buildings. Topics include compaction, seepage, subsurface stress, shear strength and settlement. Laboratory sessions are devoted to testing soil samples for relevant properties.

BUD 322: Construction Technology II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. discuss roof covering for large span roofs and their processes of construction;
2. discuss ceiling types, materials and processes of construction;
3. explain types of welding, bolts and rivets and materials for construction; and
4. explain joints in buildings and shuttering.

Course Contents

The course deals with large span roofs: choice, types and classification, functional requirements, roof covering for large span roofs. Roof lighting: purposes, methods of construction, Materials used and types. Ceilings: types, methods of construction, materials used and types. Steel construction: field and shop operations in steel construction, procedures, erection equipment in field operations. Bolts and rivets: types, materials used, applications and procedures in steel constructions. Welding: types, materials and processes with equipment, precautions. Shuttering: materials used and types including detailed sketches of formwork. Joints in buildings: expansion and construction joints, definitions, nature, purpose and construction techniques and materials used in joints. Pre-stressed concrete: definition and purpose: methods of producing pressurised concrete items-pre-tensioning and post-tensioning.

BUD 332: Building Maintenance II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. prepare organisational charts for maintenance department and discuss its operations;
2. prepare schedule of dilapidations for buildings;
3. discuss maintainability analysis of designs; and
4. discuss various building maintenance problems and their solutions.

Course Contents

The course deals with the management aspects of building maintenance. Maintenance cycles for different types of buildings. Standards expected of buildings-deviations, spot items. Planning maintenance-resources required. Organization of maintenance departments. Building maintenance problems and their solutions. Foundations, leakages, water proofing, cladding, among others. Preparation of schedule of conditions and dilapidations. Maintenance audit and specifications. Statutory requirements for building maintenance, maintainability analysis of designs, programming, executive appraisal, policy guidelines.

BUD 342: Building Services/Equipment & Installation II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. explain the processes of water treatment, storage and distribution to end users;
2. carry out hot water and cold-water installation in buildings;
3. calculate the demand for water and select appropriate pipe sizes and fittings;
4. design drainage systems, waste disposal and install sanitary systems;
5. discuss gas services in buildings; and
6. discuss acoustics in buildings and determine noise levels.

Course Contents

The course examines the basics of water supply prospecting, treatment, storage and distribution to communities-Domestic, Industrial and Commercial needs. Hot water equipment and installation. Calculations for demand, selection of pipes and fittings. Drainage systems, waste disposal, sanitary systems. Bye law requirements of fire-fighting equipment and installation. Gas services in buildings. Aspects of internal drainage design, rainwater drainage, subsoil drainage, external drainage design. Sewage treatment plants.

Acoustics-fundamentals, concepts, hearing and noise acceptability, measurement of acoustic properties, calculation of noise levels (outdoors and indoors). Principles of noise control, noise control in practice. Design for noise and hearing. Use of electroacoustic aids.

BUD 312: Reinforced Concrete Design I (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, the students should be able to:

1. understand the design principles for reinforced concrete elements;
2. design and detail concrete floor/roof slabs, columns and foundations; and
3. prepare bar bending schedules for reinforced concrete members.

Course Contents

Introduction to Euro codes for design of building structures, design principles for reinforced concrete structures covering beams, columns, slabs, footings and retaining walls.

Slabs: types of slabs, design methods and procedures, One-way spanning solid slabs, One-way spanning ribbed slabs, Two-way spanning solid slabs, restrained solid slabs, Waffle slabs, flat slabs.

Columns: Types, loads, classification and design considerations, effective heights of columns, short braced axially loaded columns, short columns subjected to axial load and bending about

one axis, symmetrical and unsymmetrical reinforcement, column sections subjected to axial and biaxial bending, design of slender columns.

Foundations: Functions, types and general considerations, isolated pad bases/eccentrically loaded pad bases. Wall, strip and combined foundations. Software for reinforced concrete design of building structures. Design One-storey live project. Introduction to deep beam and corbel.

BUD 362: Health & Safety Management in Construction (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. understand the need for health and safety in construction;
2. assess major hazards and risks in construction;
3. select and use appropriate PPE on site; and
4. prepare Project health safety plan for management of any construction project.

Course Contents

Introduction to Health and Safety Management Systems. Health and safety planning, implementations and control. Assessment of hazards and risks in each element of construction. Development of health and safety policy for an organization. Health and safety in construction using ISO 9001 standards. Assessment and implementation of Risk Control Plan. Accidents and incidents investigation process. Reporting of accidents. Formation and duties of Health and Safety Committee in an organization. Housekeeping at Construction site. Selection and utilization of appropriate PPEs at site. Ergonomics in project delivery process. Finally using the lessons learnt, student will be able to develop a Project Health and Safety Plan for the management of any particular project.

BUD 372: Project Planning and Control

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. understand the planning and controlling roles in construction management;
2. understand different stages of planning in construction projects execution;
3. carry out productivity studies on construction sites; and
4. carry out cash flow analysis.

Course Contents

Meaning and nature of capital projects: The meaning of management and its role in construction; the planning and controlling roles in management; different stages of planning in the execution of building projects. Practical steps in planning and control during the execution of building projects: Co-ordination, control and supervision of simple and multiple contracts, site layout, introduction to work study; productivity studies. Financing capital projects; working capital, flow of funds.

BUD 374: Building Contracts Law and Alternative Dispute Resolution (2 Units C: LH 30)

Learning Outcomes

At the end of this course, the students should be able to understand the:

1. the laws of agency and torts;
2. the nature of building contracts and contract conditions;
3. the rights and duties of various parties to a contract; and
4. the advantages of Arbitration over legal proceedings.

Course Contents

A comprehensive study of construction contracts including conditions of agreement and modifications. The students will also be introduced to related laws of agency and tort.

Nature of building contracts, formation of contracts, construction contracts and rectification, conditions of contracts: standard conditions of building contracts FMW version (latest edition), JCT, FIDIC.

Rights, and duties of various parties, interrelationships of the various consultants and the contractor, relationship between main contractor and nominated sub-contractors, principles of domestic sub-contracting.

The right to payment at the time of completion, varied work.

Contract types (lump sum, cost plus, PPP); conditions, and disadvantages, standard contract documents, articles of agreement for building contracts, general principles of tort, tort affecting land and negligence, nuisance, trespass, strict liability, liability for animals.

Meaning of arbitration and its contrast with other legal proceedings,

basic ingredients of agreement to submit to arbitration Vis a Vis conditions of contract, Arbitration decree 1988 (and previous Acts),

Arbitration as it relates to construction industry disputes,

appointment and duties of arbitrator/umpire/referee: multi-door court houses,

arbitration proceedings: procedure prior to hearing.

Hearing – preparation of cases, award, costs/fees, evidences, valuation, point of claim and defence, other particulars.

BUD 376: Construction Planning, Methodology and Programming for Builders (3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of this course, the students should be able to:

1. explain different stages and phases of planning;
2. construction methodology for building works;
3. relate construction methodology to construction programme; and
4. apply appropriate computer software programmes to prepare construction methodology and construction programme.

Course Contents

Different stages and phases of planning – pre-contract and contract; site organization and site layout planning; Elements of construction planning; Construction methodology for building

projects; construction sequencing and logic as part of construction methodology; Relationship between construction methodology and the construction programme; the construction program as a contract document, a planning, monitoring and control tool for time, budget, costs and other resources. Time as a deliverable on building projects; detail exposure to construction planning and programming and use of appropriate software (Microsoft Project/Primavera/Navis Works) for Builders: operation relationships and precedence; resource levelling, resource scheduling, earned value analysis. Timing and milestones in programming, progress monitoring and control; managing (planning, tracking, controlling) resources – time, costs and manpower. using the construction programme; preparation and submission of the construction programme. In this course each student is required to prepare a complete construction programme (using Microsoft Project or Primavera or any other advanced software prescribed by the course lecturer) for a building project. The student is also required to submit a bound construction programme with accompanying report in an acceptable professional format.

BUD 378: Alternative Technologies and Construction Methods (2 Units C: LH 30)

Learning Outcomes

At the end of this course, the student should be able to:

1. explore local technology options and proffer possible solutions to construction problems.

Course Contents

Technology options for various design solutions. Examination of local technology, intermediate technology and examination of technology involved in other parts of the world. Construction methodologies to be explored by the registered Builder for various design solutions are explored. Hypothetical or real-life project scenarios.

BUD 391: Research Methods (2 Units C: LH 30)

Learning Outcomes

At the end of this course, the students should be able to

1. understand various research techniques;
2. develop writing skills;
3. prepare research proposal;

4. carry out detailed research in specific areas of specialisation; and
5. prepare a detailed research report.

Course Synopsis

Research techniques and writing skills. Meaning of research. Types of research. Tools for research. Research planning and designing. Review of literature. Nature of data/research methodology. Research proposal. Use of statistical tools in problem solving. Presentation of research results

BUD 402: SIWES**(15 Units C: PH 675)****Learning Outcomes**

At the end of the course students should be able to:

1. Organized and carry out site layout;
2. Carry out setting out of buildings
3. Manage production process of simple buildings structures; and
4. Carryout practical works in construction.

Course Contents

Site layout, setting out, design of simple buildings, studio works, site supervision and building production management, documentation and management.

BUD 411: Reinforced Concrete Design II**(2 Units C LH 15; PH 45)****Learning Outcomes**

At the end of this course, the students should be able to:

1. understand the concept of design of reinforced concrete structures in accordance to Eurocode 2;
2. design concrete elements- beams, columns;
3. draw and detail structural members; and
4. apply relevant computer software programmes in designing and detailing of structural members.

Course Contents

Introduction to the analysis and design of reinforced concrete members including beams, columns and one-way slabs in accordance to Eurocodes 2. Strength and serviceability requirements are considered:

Reinforced concrete structures, structural elements and frames, structural design, design standards, design aids and computing, detailing, materials and structural durability. Concrete materials, concrete properties, reinforcements, failure in concrete structures, limit state design, characteristic and design loads. Section design for moment.

Types of beam sections, behaviour of beams in bending, bar spacing, analysis of sections, shear, bond and torsion, lap length, torsion, simply supported and continuous beams, staircases, introduction to modelling.

BUD 413: Integrated Studio Work**(2 Units C: PH 90)****Learning Outcomes**

At the end of this course, the student should be able to:

1. demonstrate proficiency in architectural, structural and M/E design of simple structures with upper floors; and

2. prepare building production documents (builder's documents) using appropriate software programmes i.e., prepare construction programme; project health and safety; project quality management plan; and construction methodology.

Course Contents

Studio-based course aimed at consolidating the knowledge and skill the students would have acquired from the different courses over the years. The course focuses group or individual/independent work on buildings in which students are expected to demonstrate proficiency in the design, development of services, structural computations, structural detailing (Students are to engage in detailing of a complete building or of a structural element thereof) and preparation of the following building production management documents (otherwise known as Builder's documents): Construction Program (using Microsoft Project/Primavera), Project Health and Safety Plan, Project Quality Management Plan, Construction Methodology. Solutions to set assignments with adequate clarity and against a set time frame.

BUD 431: Construction Plant & Equipment (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. classify plants and equipment used in heavy/large scale construction works;
2. select construction plants and equipment; and
3. determine and select appropriate procurement methods for acquisition of construction plants and equipment.

Course Contents

Introduction and types of plant and equipment used in heavy/large scale construction works, including their principles of operation, and productivity.

Mechanical plants in the construction process: types and uses.

Procurement and Management, Equipment ownership, hiring/leasing, equipment selection criteria and cost implications.

Operation and maintenance of mechanical plants.

Methods of assessing performance.

Different types of mechanical equipment such as excavation equipment, materials handling equipment, earthmoving and compaction, drilling and blasting equipment.

BUD 441: Buildability & Maintainability Analysis (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. Understand concepts and principles of build ability and maintainability;
2. Carry out build ability and maintainability analyses; and
3. Prepare build ability and maintainability reports for building projects.

Course Contents

Definition of buildability, alternative name of constructability, development of concepts and principles of buildability, stages of consideration, benefits of good buildability, support for buildability, barriers to implementation, the need for buildability, project aspects influencing buildability, the construction process, conceptual planning for buildability. Information for preparing buildability analysis; responsibilities. Techniques of assembly, personnel organisation,

site organisation and layout. Project communications, operational control, availability of skills and labour resources. Maintainability analysis: a total process approach, the requirement for maintenance and repair, condition – based maintenance management. Preparation of buildability and maintainability analysis by Registered Builders; cost and construction implications of design variables.

BUD 451: Quality Management for Building

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. understand concepts and principles of quality control and management;
2. apply ISO concepts on quality in construction;
3. understand builders' role in quality management in construction;
4. prepare quality management plan in construction; and
5. apply computer software programmes for quality management in construction.

Course Contents

The development of quality concepts: quality assurance, quality control, statistical quality control, the total quality management concept, quality management; General principles of quality management processes. ISO concepts for quality. Development of quality standards in construction; the client and his brief, Quality management during construction stage; Builder's role of integrating designers' inputs; achieving quality in the finished project through the process, Builders' responsibility for quality.

Development of quality management plan for a project. Site management responsibilities in quality management. Inspections and testing materials and construction processes. Handling corrective actions. Assessment of quality craftsmanship of artisans and craftsmen. Establishment of quality Records for a project. Quality tests, site project reports, and carrying out early warning systems. Building management monitoring and control from inception to completion to ensure quality project. At the end of this course, the student will utilize knowledge gained to develop project quality management Plan for any particular project.

BUD 461: Construction Finance

(2 Units C: LH 30)

Learning Outcomes

At the of the course, the students should be able to:

1. understand and apply accounting equations;
2. understand principles of accounting for construction and work progress;
3. carry out cash flow analysis in construction; and
4. prepare and interpret profit and loss account of construction firms.

Course Contents

Definition of accounting, the scope and function of financial accounting. The accounting equations, the theory of double entry bookkeeping. Accounting for construction and work in progress. Profit and loss account of a construction firms. Depreciation of assets, cost of capital, working capital and flow of funds, cash flow analysis.

Topics include construction financing during all phases of project development involving permanent loans, construction loans, sources of mortgage funds and venture capital, and tax and interest considerations.

BUD 471: Building Economics and Cost Planning

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. discuss factors affecting construction costs;
2. prepare preliminary estimates and budgets for construction works;
3. discuss construction and the economy;
4. understand market structures in construction industry; and
5. carry out cost planning of building works.

Course Contents

Practical procedures for building construction estimating of most major trades; analysis of factors and methods affecting construction costs; bid strategies; preparation of preliminary budgets and complete working estimates with quantities and costs of materials, labour and overhead, how computer applications are explored in building constructions and the economy, managing the macro economy, environmental economics, economic system of resource allocation, market mechanisms in construction. Costs of construction materials, theories of demand and supply. Types of market structures in construction industry. Cost planning: introduction to cost criteria, planning and process of cost planning, cost centre and design economics; cost data, indices analysis and research. Cost Benefit Analysis; cost checks and reconciliation, construction cost (cost implication of construction methods, practical application of cost control during construction process). Review of measurement of building works and estimating within professional offices; economics and the construction industry.

BUD 481: Concrete Technology for Building & Infrastructure Project **(2 Units C LH 15; PH 45)**

Learning Outcomes

At the end of this course, the students should be able to:

1. discuss concrete materials and types of concrete;
2. carry out concrete mix design;
3. prepare different types of concrete;
4. discuss properties of fresh and hardened concrete; and
5. carry out various tests on fresh and hardened concrete.

Course Contents

Concrete as a basic building material; Construction materials for concrete production – cement, aggregates, water, admixtures; Types of concrete – normal concrete, high performance concrete, air-entrained concrete, lightweight concrete, self-compacting concrete, short Crete, ready-mix concrete; Concrete mix design; Various concrete mixes for different classes of projects; Properties of fresh and hardened concrete: Water cement ratio, workability, bleeding, segregation, hydration, air-entrainment in fresh concrete; strength, creep, shrinkage, modulus of elasticity, water tightness, rate of strength gain in hardened concrete; Timber forms for concrete slab, beam, column and foundation; Production of concrete – batching, mixing, transporting,

placing, compacting and curing; Quality control of fresh concrete; Tests on concrete – slump tests, compression test, test for Poisson’s ratio of concrete, ultrasonic test, Schmidt test; Admixtures to concrete – accelerating admixtures, retarding admixtures, fly ash, air-entraining admixtures, water retarding admixtures; Performance and utilization of concrete in buildings and associated infrastructure such as rigid pavements; Application of special concrete and green concrete technology; Maintenance aspects and problems.

BUD 483: The Technology and Management of Mass Housing Projects

(2units C: LH 30)

Learning Outcomes

At the end of the course, the students should be able to:

1. discuss the concept of mass housing;
2. apply contemporary technologies in mass housing; and
3. generate innovative alternatives in mass housing.

Course Contents

Students are required to study any on-going mass housing projects, examine and write on the technology being used, make a critique of same and propose better or alternative solutions.

BUD 491: Operations Research (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. apply statistical tools for data analysis; and
2. apply operations research tools in construction management.

Course Contents

Statistics course that equips the student with knowledge of different tools for data analysis as well as results interpretation. Operation research as management tool.

Applications of operation research in construction industry.

Theory of games. Transportation. Assignment. Linear programming. Inventory control
Queuing theory. Replacement theory.

BLD 493: Skills Development for Builders (1 Unit C: LH 15)

Learning Outcomes

At the end of the course, the students should be able to:

1. establish and manage construction business;
2. analyze problems of construction business;
3. explain National occupational standards for building trades;
4. explain national skills qualification framework for building industry in Nigeria;
5. differentiate between Sectors Skills Council, Awarding Body and Training Provider; and
6. acquire extra skills in construction and undertake supervision of building trades in construction.

Course Contents

Entrepreneurial theories, interpersonal or personal character and behavioral traits. External aspects of entrepreneurship. Operational functions of an entrepreneur (production, marketing, financial management, accounting). Basic consideration in starting business. Organization and management of business. Business ethics, social responsibility of business. Business promotion agencies in Nigeria. Business and government. Role of Nigerian government in business. Business promotion agencies in Nigeria. Problems of Nigerian business enterprises. Peculiarities of construction business enterprises. Construction and property business in Nigeria. Service organization, labor management relations. Case studies in construction entrepreneurship. National occupational standards for building trades. National skills qualification framework for building industry in Nigeria. Skills Sector Council, Awarding Body and Training Provider. Skills acquisition in construction and supervision of building trades in construction.

BUD 495: Real Estate and Housing Development

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, the students should be able to

1. explain the important of real estate;
2. identify stakeholders in real estate and housing development; and
3. explore various technology options for mass housing development.

Course Contents

The role and importance of real estate. Parties in real estate, Real Estate Development Processes, Finance. Off takers, Demand and supply side for real estate, Technology options for mass housing, Financial and legal aspects of real estate and housing development.

500 Level

BUD 511: Reinforced Concrete Design III

(2 Units C: LH15; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain materials and equipment for prestressing concrete;
2. analyse and design plates and shells as well as reinforced concrete frame design;
3. discuss properties of steel and concrete for prestressed concrete; and
4. design and construct different types of retaining walls.

Course Contents

Design of foundations, analysis and design of plates and shells as well as reinforced concrete frame design. Pre-stressed concrete classification to Eurocode. Pre-stressing methods, materials and equipment for pre-stressing. Properties of steel and concrete for pre-stressed concrete. Analysis of sections subject to axial and eccentric pre-stressed forces. Determination of minimum pre-stressed force. Retaining walls, types of retaining walls; joints in water retaining walls, analysis of retaining walls for stability, reinforcement details in retaining walls. Basic knowledge of design consideration and procedures. Composite structures. Design of shallow foundations.

BUD 512: Design of Steel Structures**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain the production process and properties of steel;
2. identify different design codes for steel structures;
3. design steel elements; and
4. apply appropriate computer software programmes in design of steel structures.

Course Contents

This course introduces the students to steel structures with emphasis on the production process and properties of steel, design of members and the applicable codes and performance specifications. Elements of steel frame for industrial buildings. Grades of steel used in construction; steel sections used for structural purposes. Metallurgical considerations in the selection of steel for building purposes. Elastic design to Eurocode 3 and its limitations. Protection of steel structures against fire and corrosion. Philosophy of Steel Design and Design Principles. Design of simply supported steel beams. Design of multi-story steel column; cased steel columns (encased in concrete), types of column bases and column caps. Design and details of steel roof trusses. Built-up beams; design and details. Elementary plastic theory. Application of Eurocode 3 to steel design. Design Project using computer software programmes.

BUD 521: Advanced Construction Technology I**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. understand the construction of complex elements like cofferdams, deep excavations and caissons; and
2. select materials for complex constructions.

Course Contents

This course details processes, methods and materials for more complex construction elements like deep excavations and cofferdams caissons. It will introduce the students to the basic principles and techniques for the adoption and successful application of these methods in construction.

BUD 522: Advanced Construction Technology II**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain industrialized proprietary building systems; and
2. carry out case studies on failures of industrialized building systems.

Course Contents

This course is an introduction to industrialized proprietary building systems for different building types and conditions. Mechanical and electrical systems and their installations. Mechanical plant on site. Refuse disposal. Large open roof system. Piling system. Basements, retaining walls and swimming pools. Case studies on building failures. Roads, paving and slabs.

BUD 541: Professional Practice and Ethics**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course, the students should be able to:

1. understand the general principles of good practice by Professional Builders;
2. explain relationship between the professional associations and regulatory bodies;
3. understand the roles of professional builders as consultants and construction managers;
4. areas of entrepreneurship and opportunities for builders; and
5. understand mentorship and its relevance in building practice.

Course Contents

The course deals with the principles of good practice by registered builders in relation to other sister professions and the interest of clients and the public. Characteristics of a profession; the relationship between professional associations and their regulatory bodies; the professional registration boards in the construction industry and their regulation; ethics and professional practice; professional ethics and moral obligations; partnerships and consortia; The builder and the building code; contract documents and construction documents in the Nigerian building code; core competency and services of professionals irrespective of procurement methods; Design and build. Building production management (BPM) as a distinct technical service of the registered builder. Principles, preparation and use of building production management documents roles of builders in contracting organisations; roles of builders in client organisations; consultancy practices and their regulations. Setting up a builder's consultancy office; consultancy services of registered builders on building projects – preconstruction (predesign, design and tendering stages), construction stages, post construction stages (facility management/maintenance and deconstruction stages). Roles of resident builders; concepts and theories of professional fees; tendering and bidding strategies. Building production management reports. The builder and sustainable construction, green building. Entrepreneurship for builders, prospecting for jobs: consultancy or contracting; mentorship and business packaging for builders; national and international building codes, regulations and byelaws.

BUD 552: Contract Administration and Dispute Resolution**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to understand:

1. general principles of contract administration;
2. computer application in contract administration and e-tendering; and
3. different methods of dispute resolution.

Course Contents

General principles, accountability, competition and negotiation, fixed price, cost reimbursement contracts, early selection, two-stage tendering. Target cost contracts, management contract, design and contracts, continuity contracts. Types of tendering, tendering process, client's and contractors' perspectives, e-tendering; litigation and alternative dispute resolution methods.

BUD 571 Project Management I (2 Units C: LH 30)

Learning Outcomes

At the end of the course, the students should be able to:

1. differentiate construction management and project management;
2. explain management by objectives; and
3. discuss various aspects of project management in relation to cost, time and quality management.

Course Contents

Definition of project management, classification and characteristics of projects, the project manager, qualities and characteristics of project manager, management by objectives, project communications management, cost management, resource management, integration management, project management framework, procurement management, quality management, risk management, scope management, time management.

BUD 572: Project Management II (2 Units C: LH 30)

Learning Outcomes

At the end of the course, the students should be able to:

1. analyse management thoughts;
2. apply computer software programmes in feasibility analysis; and
3. apply computer software programmes in project management.

Course Contents

The course deals with the practice of project management as a direct service to client on an in-house or consultancy basis. Analysis of management thoughts, the use of electronic computers to analysis feasibility, design, execution and management of building projects including financial approval and use of scarce resources.

BUD 591: Project Report I (2 Units C: PH 90)

Learning Outcomes

At the end of this course, the students should be able to:

1. carry out research proposal; and
2. carry out and submit a research project under the supervision of a nominated supervisor.

Course Contents

Each student is expected to work on an independent project involving practical and scientific investigations. The course is part of the overall student's project report. This involves the submission of a research project of about 15,000 words on a topic of the students' choice under the supervision of a nominated supervisor. The research project is normally assessed at the end of the session by both internal and external assessors.

BUD 592: Project Report II**(2 Units C: PH 90)****Learning Outcomes**

At the end of the course, students should be able to:

1. carry out research proposal; and
2. carry out and submit a research project under the supervision of a nominated supervisor.

Course Contents

This is a continuation of Project Report I. This involves the submission of a research project report on a scientific investigation of about 15,000 words on a topic of the students' choice under the supervision of a nominated supervisor. The research project is normally assessed at the end of the session by both internal and external assessors.

**BUD 593: Building Information Modelling (Bim) & Robotics I
(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, student should be able to:

1. describe information management fundamentals;
2. explain data modelling;
3. describe the concept of BIM and its benefits;
4. carry out the application of BIM in design, construction and management of building projects;
5. apply BIM software programmes in production of Builder's documents; and
6. identify new developments in robotics, machine learning and artificial intelligence in buildings.

Course Contents

Information Management fundamentals; information management systems. Data flow modelling. Knowledge management: Definition & properties of knowledge, classification of knowledge, IT infrastructure for KM. BIM Concepts: Definition; Benefits; 3D Modelling, Virtual design/construction; surface and solid models; BIM Applications: Design, Construction and Management phases of projects; BIM Technologies; CAD, Object CAD, Parametric building modelling; BIM software; Vendors/products (Navis Works, Google Sketch-up, Bentley, Autodesk, Vico, Tekla), origins and capabilities. BIM and Sustainability; BIM Implementation and Integrated Project Delivery, Developments in Robotics, Machine Learning and Artificial Intelligence. Students are required to use the BIM platform to produce the Builder's documents and all other documentation produced in the Integrated Studio Work Course.

BUD 594: Building Information Modelling and Robotics II (2 Units C: LH 15; PH 45)**Learning Outcomes**

At the end of the course, students should be able to:

1. understand more areas of application of BIM in design, construction and management of building projects;
2. understand further developments in robotics, machine learning and artificial intelligence in buildings; and
3. develop software or adds-on for digital construction.

Course Contents

This course is a continuation of Building Information Modelling and Robotics I. It deals with construction automation and digital construction. Here students are exposed to the knowledge of both hardware and software for automation and digital construction. Students are also challenged to understand or develop software or add-ons for digital constructions including emergent issues and advances in machine learning and artificial intelligence in construction.

Minimum Academic Standards

Equipment

Wood/Timber Workshop Equipment

1. Woodworking machinery (all-purpose)
2. Wood making hand tools
3. Protective cover equipment
4. Circular saw
5. Drilling machine
6. Lathe machine
7. Electric blower
8. Portable bracing machine
9. Dimension bench
10. Finishers
11. Portable cross cut saw

Building Services Workshop Equipment

1. Welding apparatus
2. Electric blower
3. Hand drill
4. Electric heater
5. Soldering kit/apparatus
6. Acetylene regulator
7. Spark lighter
8. Lead pot
9. Sanitary appliances and fittings
10. Water heater
11. Pipe cutter
12. Portable copper tube bending
13. Bench pipe vice
14. Cylinders
15. Forging machine
16. Plumbing and drainage pipe and fittings (assorted)
17. Sets of tool boxes

Instructional modules

While flexibility is allowed in the depth of the body of knowledge in the Building programme it is essential that all programmes will ensure that students are conversant with the following major aspects of building:

1. Building Construction Technology/Materials
2. Building Maintenance/Facilities Management
3. Building Services
4. Building Structures
5. Construction Management

Staffing

The personnel requirements for the programmes should reflect student population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15 for the programme.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments and faculty offices. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment. Considering the technological bias of Building education, availability of adequate technical staff is crucial. The specialisation of the technical staff may vary depending on the situation of the particular department. Departments that exist within institutions or faculties where technical staff from Engineering and Natural and Physical sciences can make input need not recruit technical staff in all specialisation required in Building programmes. The table below is a suggestion of staffing levels for technical support in the Building programme.

Appropriate cadre of technical staff should be provided based on the NUC prescribed ratios for the following areas:

1. Structures/Concrete Laboratory
2. Services Laboratory
3. Technical Drawing Room and Workshops.

Library and Information Resources

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classroom, Laboratories, Clinics, Workshops and Offices spaces

For the good administration of each programme, adequate facilities should be provided for the office of the Dean and for each of the departments. The required minimum standards for each of the programmes are reflected in the relevant sections for each programme. Spaces will normally include:

Office Accommodation

1. Classroom Space
2. Studio Space
3. Seminar Rooms
4. Drawing Offices
5. Workshop Spaces
6. Library

In the case of the Office of the Head of Department, office accommodation should be provided as follows:

Head of Department's Space

1. Examination Officer
2. Secretary to the Head of Department
3. Administrative Secretariat
4. General Office
5. Conference Room

	Space	Use	(m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35

	Space	Use	(m²)
15.	Social Space	Students	40
16.	Storage Space	Students	30

Centralized Laboratory and Technical Facilities

Certain laboratories and technical facilities are common to many of the programmes. It is therefore strongly recommended that such laboratories and facilities be established centrally in each faculty/college which will include:

1. Computer Laboratory
2. Library/Resource Centre
3. Soil Science Laboratory
4. Materials Laboratory
5. Building Physics Laboratory
6. Reprographics Centre
7. Workshops

Computer Laboratory

The computer lab is a classroom designed to teach about and with computers. The primary considerations in its design size and location should be; ease of use, security and reliability. Appropriate hardware and software to meet the general student needs in the environmental sciences need to be provided.

Equipment:

Listed below are equipment required for the programme:

1. Work stations at the minimum ratio of 1 computer to every 4 full time equivalent students with Autodesk and relevant software programmes.
2. Management Station: a set of control work stations to control access and usage of the work stations
3. Server(s)
4. Switch
5. UPS systems/power backup
6. Power voltage regulators/stabilizers
7. Air conditioning
8. Internet connectivity

Soil Science Laboratory

The soil science laboratory will normally be equipped to carry out soil sampling and classification tests, soil analysis and soil moisture, permeability and bearing capacity tests. This range of tests will normally guide the range and type of equipment required. Listed below is a sample list of such equipment.

Materials Testing Laboratory

The materials testing lab should be equipped to carry out experiments and tests on a wide range of materials including concrete, soils, asphalt, bitumen, and aggregates.

Mechanical testing equipment

1. Universal testing machine

2. Impact testing machine
3. Vickers hardness testers
4. Notching machines
5. Hydraulic test pump
6. Extensometer
7. Digital thermometers

Metallographic Testing Equipment

1. Shadowgraph checking machine
2. Metallurgical microscope with image analyser

Chemical Analysis

1. Carbon sulphur determinator
2. Atomic absorption spectrometer
3. Vacuum spectrometer
4. Weighing machines
5. Muffle furnace
6. Glass thermometer
7. Oven
8. Ammeter
9. Pressure gauges
10. Proving rings

Building Physics Laboratory

The building science lab enables multi scale experiments and studies ranging from urban scale to the micro environment. The range of equipment required include field studies equipment (usually hand-held) and controlled environment equipment.

Field Studies Equipment

1. Infrared thermometers
2. Environmental data loggers
3. Heist flux sensors/meters
4. Flow meters
5. Tracer gas systems
6. Watt hour meters
7. Thermometers/digital, thermocouple
8. Anemometers
9. Humidity meters
10. Air quality meters
11. Sound meters
12. Portable weather stations
13. Heliodors

Controlled Environment Equipment

1. Sky simulator
2. Boundary layer wind tunnel

3. Controlled environment chamber

Reprographics Centre

1. Heavy duty photocopiers
2. Heavy duty batch scanners
3. DV cameras
4. SLR cameras
5. A3 colour printers
6. A3 scanners
7. Large format (A0) plotters
8. Large format (A0) scanners

Workshops

The following workshop spaces are required. The workshops may also be used for displays of different materials building systems:

1. Carpentry and joinery/furniture
2. Masonry and concrete work
3. Simple electrical wiring
4. Plumbing and drainage
5. Model making
6. Painting and decorating
7. Mechanical shop and welding

Office Space

Office accommodation for academic, non-academic staff and students per capital should be based on the guidelines set out in section 4 of this Core Curriculum and Basic Minimum Standards:

Classroom Space

A minimum of two classroom spaces will be required for the undergraduate programme in building. This provision assumes six hours of contact per day for each year of study.

Studio Space

A studio space is recommended for each year of study above the first year.

Seminar Space

A seminar room/hall is a critical ancillary space and is recommended for each Building programme.

Laboratory Spaces

At least 4 laboratory spaces with adequate capacity for enrolled students at any given time are required in a department of Building:

Workshop Spaces

The following workshop spaces are required. The workshops may also be used for displays of different materials building systems:

Carpentry and joinery/furniture

1. Masonry and concrete work
2. Simple electrical wiring
3. Plumbing and drainage
4. Model making
5. Painting and decorating
6. Mechanical shop and welding

7. Drawing office equipment:

- T-Squares and drawing tables
- Enlargement and reducing machine
- Guillotine
- Photocopier
- Duplicating machine
- Slide projector
- Scanner
- Typewriters

Construction Equipment:

1. Concrete Mixers (1 small and 1 large)
2. Dumper
3. Pokervibrator
4. Crane
5. Rammer

Surveying Equipment

1. Theodolites
2. Quick set levels
3. Chains
4. Tapes
5. Ranging rods
6. Distance measure tapes
7. Total station
8. GPS

B.Sc. / B. Tech. Clothing and Textile Design

Overview

Clothing and textile involve designing, construction and production of fabrics and apparel. Textile is the production of fabrics from raw material (fibre) while clothing is the transformation of these fabrics into garments and other accessories. The textile section of the programme involves converting the raw material to yarn, weaving of yarn into fabric, printing/ dyeing and finishing the fabric while clothing consists of cutting the fabrics and sewing them together to create apparel or accessories such as garments for various ages and gender, under garments, outing accessories and household articles such as curtains, bed sheets, duvet, table cloth and kitchen apron.

The programme is complemented by courses in weaving techniques, textile materials, computer aided design in clothing and textile, textile and fashion marketing, advanced construction and tailoring techniques, creative fabrics and fashion accessories, fabric care and clothing maintenance, design, product development, pattern making and in the historical, cultural and psychological aspects of textiles and dress. The programme will provide students with background necessary to enter a diverse array of careers in textile and apparel related businesses.

Philosophy

The philosophy of the Clothing and Textile programme is to produce graduates in Clothing and Textile Industry that will be self-employed, globally relevant and excel in a dynamic business world. The curriculum adopts effective techniques of instruction, laboratory practical, field demonstration, workshops and industrial training.

Objectives

The objectives of the programme are to:

1. attract prospective students who possess a strong desire to learn and pursue a career in clothing and textile;
2. train graduates that will develop the required entrepreneurial skills to set up, manage and operate profit-oriented businesses based on management of human and material resources;
3. enable students develop skills of reflection, critical thinking and analysis, communication acuity and the capacity for independent and team work/project collaborations;
4. promote scholarship and high-quality research aimed at solving the problems confronting the clothing and textile industry;
5. train graduates to be self-employed or employer of labour as well as being engaged in the service needs of both private and public organisations;
6. expose the students to industrial work experience; and
7. equip graduates with high standard of academic and professional competence in the pursuance of higher degree programmes.

Employability Skills

1. Dress Making and Tailoring.
2. Bridal Costume Specialist.
3. Sport Wear Specialist.
4. Undergarments Specialist.
5. Children's Garment Producer.
6. Upholstery Making.

7. Military Costume Specialist.
8. Household Article Specialist.
9. Clothing and Textile Production (Resist Dyed fabrics such as Batik, tie and dye).
10. Weaving.
11. Pattern Developing/Pattern Making.
12. Textile/Fabric Design Production.
13. Embroidery Designing.
14. Consultancy Services.
15. Interior Decorator/Designer.
16. Computer Aided Design Programmer.
17. Wardrobe Planner · Event Organizer.
18. Laundry Operator.
19. Haberdashery Dealer (Sales of Clothing accessories).
20. Textile Designer.
21. Fashion Designer and Model.
22. Fashion Merchandiser.
23. Fashion Communicator/Journalist.
24. Fashion Accessories Designing and Production.
25. Millinery (Women's hat) Production.
26. Teaching/Lecturing.
27. Researcher.

21st Century Skills

1. Critical thinking
2. Creativity
3. Collaboration
4. Communication
5. Information literacy
6. Media literacy
7. Technology literacy
8. Flexibility
9. Leadership
10. Initiative
11. Productivity
12. Social skills

Unique Features of the Programme

1. exploration of new technology: The students will be challenged to explore the possibilities of new technologies, new materials and innovative design solutions in both physical and digital media;
2. creative design skills: Students will acquire the skills to combine design, commerce, industry and research-based approaches;
3. re-thinking: The programme emphasizes the understanding of different cultures and encourages students to innovate and re-think current practices in clothing and textiles and acquire essential skills in multidisciplinary co-operation and communication in product and material development; and
4. analytical skill set: The students will acquire analytical skills to analyse the practices and phenomena in fashion, clothing, textiles and design. The programme fosters students'

presentation skills in writing and visualisation. Students gain an understanding of design research methods and learn to apply them in creative, academic, societal and business contexts. The programme also provides students with skills needed in postgraduate studies.

Admission and Graduation Requirements

Admission Requirements

Admission into the Programme may be through any of the following modes:

UTME Mode: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Chemistry, Fine Arts, Clothing and Textile, Physics (Candidates must have at least a pass in Physics), will be eligible for admission through the Unified Tertiary Matriculation Examinations (UTME).

Direct Entry Admission Mode: Candidates who fulfil the requirements for UTME admission and who have obtained General Certificate of Education (GCE), Advanced Level; Higher School Certificate (HSC)/Interim Joint Matriculation Board (IJMB), National Diploma (ND), Holders of National Certificate in Education (NCE) with Minimum Upper Credit in Home Economics/ Home Science, Fine Art, Textile Design or related field may be considered for direct entry to 200 level provided they have UTME entry requirement.

Holders of HND (Minimum Upper Credit) in Home Economics/ Home Science, Fine Art, Textile Design or related field may be considered for direct entry to 300 level provided they have UTME entry requirement.

Graduation Requirements

To graduate, a student should have undergone 3, 4 or 5 years of study depending on his/her entry point including a 6-month Industrial Training. Course workload must meet the graduation requirements of the University. The student must earn a minimum of 150/120 credit units for the five/four-year programme and 90 credit units for the three-year (direct entry) programme. In addition:

He/she must have passed all the compulsory courses.

- ii. He/She must have passed all Departmental/College core courses and required electives.
- iii. He/She must not have spent more than additional two and half years above prescribed minimum duration specified.
- iv. He/She must not have less than a CGPA of 1.00 at the end of the program.

Degree programme in Clothing and Textile shall normally be for a minimum of Ten (10)/Eight (8) academic semesters for UTME entry mode students and six (6)/four (4) academic semesters for 200 and 300 Level Direct Entry admission candidates respectively.

Global Course Structure

100 Level

COURSE CODE	COURSE TITLE	UNITS	STATUS	LH	PH
GST 111	Communication in English	2	C	15	45
GST112	Nigerian Peoples and Cultures	2	C	30	
MTH101	Elementary Mathematics I	2	C	30	-
MTH102	Elementary Mathematics II	2	C	30	-
PHY101	General Physics I	2	C	30	-
PHY107	General Physics Practical I	1	C	-	45
CHM101	General Chemistry I	2	C	30	
CHM 102	General Chemistry II	2	C	30	
CLT101	Introduction to Clothing Techniques	2	C	30	-
CLT102	History of Costumes	2	C	30	-
CLT103	Introduction to Pattern Drafting and Design	2	C	-	90
CLT104	Fabric care and Clothing Maintenance	2	C	30	-
CLT105	Introduction to Weaving Techniques	2	C	-	90
	Total	25			

200 Level

COURSE CODE	COURSE TITLE	UNITS	STATUS	LH	PH
GST 212	Philosophy, Logic, and Human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
STA 231	Statistical Computing II	2	C	30	-
CLT 201	Basic Design in Textile Production	2	C	-	90
CLT 202	Clothing Construction	2	C	-	90
CLT 203	Textile Materials	2	C	30	-
CLT 204	Creative Fabrics and Fashion Accessories	2	C	15	45

CLT 205	Principles and Techniques of Textile Design	2	C	15	45
CLT 206	Computer Aided Design in Clothing and Textile	3	C	15	90
	TOTAL UNITS	19			

300 Level

COURSE CODE	COURSE TITLE	UNITS	STATUS	LH	PH
GST 312	Peace and Conflict Resolutions	2	C	30	
ENT 312	Venture Creation	2	C	15	45
CLT 301	Interior Decoration and Design	2	C	15	45
CLT 303	Nigerian Clothing and Textile Industries	2	C	30	-
CLT 305	Fashion Drawing, Design and Modelling	2	C	-	90
CLT 307	Advanced Weaving Techniques	2	C	-	90
CLT 300	SIWES	15	C	-	675
	TOTAL UNITS	27			

400 Level

COURSE CODE	COURSE TITLE	UNITS	STATUS	LH	PH
CLT 401	Textile Production	2	C	-	90
CLT 402	Design Consultancy in Clothing and Textile	2	C	30	-
CLT 403	Textile and Fashion Marketing	2	C	30	-
CLT 404	Advanced Construction and Tailoring Techniques	3	C	30	90
CLT 405	Research Methods in Clothing and Textile	2	C	30	-
CLT 406	Pattern Drafting and Design	2	C	-	90
CLT 407	Entrepreneurship Education in Clothing and Textile	2	C	30	-
CLT 497	Seminar I (Pre-Data)	1	C	15	-
CLT 498	Seminar II (Post-Data)	1	C	15	-

CLT 499	Project	4	C		180
	TOTAL UNITS	21			

Course Contents and Learning Outcomes

100 Level

GST 111: Communication in English (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing , Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and Mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture (2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of trade, economic and self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian state towards nation building;

6. analyse the role of the judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

PHY 101: General Physics I (Mechanics)

(2 Units C: LH 30)

Learning Outcomes

On Completion, the Student should be able to;

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum;
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time; units and dimension, vectors and scalars, differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton laws of motion (Inertial frames, Impulse, force and action at a distance, momentum conservation); Relative motion; Application of Newtonian mechanics; Equations of motion; Conservation principles in physics, conservative forces, conservation of linear momentum, Kinetic energy and work, Potential energy, System of particles, Centre of mass; Rotational motion; Torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; Circular motion; Moments of inertia, gyroscopes and precession; Gravitation: Newton's Law of Gravitation, Kepler's Laws of Planetary Motion, Gravitational Potential Energy, Escape velocity, satellites motion and orbits.

PHY 107/108: General Practical Physics I & II

(2 Units C: PH 90)

Learning Outcomes

On Completion, the student should be able to:

1. conduct measurements of some physical quantities;
2. make observations of events, collect and tabulate data;
3. identify and evaluate some common experimental errors;
4. plot and analyse graphs
5. draw conclusions from numerical and graphical analysis of data.

Course Contents

This introductory course emphasizes quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques should be employed. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, covered in PHY 101 and PHY 102. However, emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis and deduction.

CHM 101: General Chemistry I (3 Units C: LH 45)

Learning Outcomes

At the end of this Course, the Students should be able to:

1. define atom, molecules and chemical reactions;
2. discuss the Modern electronic theory of atoms;
3. write electronic configurations of elements on the periodic table;
4. rationalize the trends of atomic radii, ionization energies, electronegativity of the elements based on their position in the periodic table;
5. identify and balance oxidation – reduction equation and solve redox titration problems;
6. draw shapes of simple molecules and hybridized orbitals;
7. identify the characteristics of acids, bases and salts, and solve problems based on their quantitative relationship;
8. apply the principles of equilibrium to aqueous systems using LeChatelier's principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures;
9. analyse and perform calculations with the thermodynamic functions, enthalpy, entropy and free energy; and
10. determine rates of reactions and its dependence on concentration, time and temperature.

Course Contents

Atoms, molecules, elements and compounds and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization and shapes of simple molecules. Valence Forces; Structure of solids. Chemical equations and stoichiometry; Chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.

CHM 107: General Chemistry Practical I (1 Unit C: PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. state the general laboratory rules and safety procedures;
2. collect scientific data and correctly carrying out Chemical experiments;
3. identify the basic glassware and equipment in the laboratory;
4. state the differences between primary and secondary standards;
5. perform redox titration;
6. record observations and measurements in the laboratory notebooks; and
7. analyse the data to arrive at scientific conclusions.

Course Contents

Laboratory experiments designed to reflect topics presented in courses CHM 101 and CHM 102. These include acid-base titrations, qualitative analysis, redox reactions, gravimetric analysis, data analysis and presentation.

CHM 108: General Chemistry Practical I

(1 Unit C: PH 45)

Learning Outcomes

At the end of this course, the Students should be able to:

1. identify and carry out preliminary tests which includes ignition, boiling point, melting point, test on known and unknown organic compounds;
2. carry out solubility tests on known and unknown compounds;
3. carry out elemental tests on known and unknown compounds; and
4. carry out functional group/confirmatory test on known and unknown compounds which could be acidic/ basic/ neutral organic compounds.

Course Contents

Continuation of CHM 107. Additional laboratory experiments to include functional group analysis, quantitative analysis using volumetric methods.

CLT 101: Introduction to Clothing Techniques

(2 Units C: LH30)

Learning Outcomes:

students should be able to:

1. identify clothing theories, clothing terms and basic clothing tools and equipment;
2. make samples of basic stitches, seams, seams finish, arrangement of fullness; and
3. attachment of various fastenings and take accurate body measurement.

Course Contents

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

CLT 102: History of Costumes

(2 Units C: LH30)

Learning Outcomes: students should be able to:

1. differentiate different costume;
2. explain the historical development of costumes;
3. describe the evolution of costumes among different ethnic groups; and
4. discuss the impact of acculturation on contemporary Nigerian fashion.

Course Contents

Definition of costumes, meaning of traditional and contemporary costumes. Various types of costumes, the different types of traditional costumes and contemporary costumes. The historical development of costume from the past to present. Evolution of costume in Nigeria, different types of costumes in Nigeria from different ethnic groups. The influence of culture, religion and tradition on the costume of different background of people in Nigeria. Major costumes used in African with emphasis on Nigeria. The evolution of contemporary Nigerian costumes. Evaluation of the current trend in traditional costume in Nigerian. The impact of acculturation on contemporary Nigerian fashion. Various contributions made by the fashion designers to the Nigerian fashion industry. Collection of photographs or samples of costume from different backgrounds.

CLT 103: Introduction to Pattern Drafting and Design

(2 Units, C: PH90)

Learning Outcomes: the students should be able to:

1. identify pattern drafting equipment and symbols;
2. draft basic blocks;
3. differentiate between commercial and drafted patterns; and
4. adapt basic blocks to simple styles.

Course Contents

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

CLT 104: Fabric care and Clothing Maintenance

(2 Units C: LH30)

Learning Outcomes: Students will be able to:

1. explain the meaning and need of laundering clothes;
2. remove stains using appropriate reagents and techniques;
3. identify care labels, symbols and meaning;
4. use appropriate washing methods and finishing agents for different fabrics;
5. store laundered clothes appropriately; and
6. know the types/ techniques in clothing repair; darning of tears in fabrics/apparel and methods of renovation/ remodelling of clothes.

Course Contents

Meaning, purpose and procedure of laundering; laundering different fabrics (cotton, linen, wool and polyester); finishing agents; using appropriate washing methods and finishing agents. Ironing and pressing; handy hints for ironing/pressing. Using the washing machine, dry-cleaning and sponging. Shaking, brushing and airing of clothes. Stains, classification of stain and stain removal; techniques of stain removal, precautions while removing stains. Laundry symbols and meaning; fabric care labels; Importance of caring for clothes/fabrics. Storing and packing clothes; storage facilities for clothing. Mending of clothes, reasons for mending clothes, different ways of

mending clothes. Customising (renovating or remodelling of clothing); reasons for renovation and remodelling, methods of renovation of clothes or fabrics and ways of remodelling.

CLT 105: Introduction to weaving Techniques

(2 Units C: PH90)

Learning Outcomes: students should be able to:

1. understand basic textile terms;
2. identify the types and parts of a loom; and
3. perform weaving operation and produce samples of woven fabrics.

Course Contents

Basic textile terms such fibre, yarn, filament, warp, weft, fabric and so on. Definition of weaving, what loom is, types of looms, identification of parts of a loom, important parts of loom, motions of loom, sequence of operations in weaving, some basic weaves/weaving techniques such as plain weave, basket weave, twill, satin weave and so on, mounting of loom, preparation of loom for weaving, operating loom, weavers knot, fabric defects, precautionary measures. Execution of original designs through performing the wrapping, drawing – in, denting and weaving on the loom.

200 Level

GST 212. Philosophy, Logic and Human Existence

(2 Units C: LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211 – Entrepreneurship and Innovation**(2 Units C: LH15; PH45)****Learning Outcomes**

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking.
2. state the characteristics of an entrepreneur.
3. analyse the importance of micro and small businesses in wealth creation, employment, and financial independence.
4. engage in entrepreneurial thinking.
5. identify key elements in innovation.
6. describe stages in enterprise formation, partnership and networking including business planning.
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world.
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

STA 231: Statistical Computing II**(2 Units C: PH 90)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain the uses of computers in statistical computing;
2. demonstrate various statistical packages;
3. use some statistical packages in solving problems in statistical methodology;
4. demonstrate the use of spread sheet in application software; and
5. be exposed to packages such as SPSS, STATA, MINITAB, to demonstrate their abilities in statistical methodology.

Course Contents

Uses of computers in statistical computing. Introduction to various statistical packages. Use of statistical packages in solving problems in statistics. spread sheet applications. Such as SPSS, STATA, MINITAB. can be used to demonstrate statistical methodology.

CLT 201: Basic Design in Textile Production (2 Units C: PH90)**Learning Outcomes**

At the end of the course, the students should be able to:

1. identify the elements and principles of design, formation of motifs; and
2. make designs on paper suitable for fabric design and production.

Course Contents

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

CLT 202: Clothing Construction (2 Units C: PH90)**Learning Outcomes**

At the end of the course, students should be able to:

1. identify suitable styles for various figures/ages; and
2. construct simple styles of garments for various figures/ages.

Course Contents

Selection of styles for various figures, needs and occasion; preparation of fabric for cutting; components of a garment; method of assembling a garment; structural additives and their uses in garment construction; necklines and neckline finishes; disposal/arrangement of fullness; set-in sleeve in a garment; ironing and pressing in garment construction; and construct garments for various figures/ages for exhibition.

CLT 203: Textile Materials (2 Units C: LH30)**Learning Outcomes**

At the end of the course, students will be able to:

1. identify the sources and classification of fibres;
2. describe the characteristics of natural and man-made fibres;
3. explain common terms in textiles;
4. identify different methods of constructing fabrics;
5. explain the purposes of fabric finishes and be able to describe the types of finishes;
6. identify the different types of fabric;
7. explain the reasons for fabric combinations and differentiate between fabric blends and fabric mixtures; and
8. identify the uses of different fabrics and describe the care of fabrics.

Course Contents

Definition of textile fibre and textile terms (yarn, filament, staple fabric, selvedge, warp yarns, weft yarns, grain, man-made fibre, fabric thread count); sources and classification of textile fibres. Methods of fibres identification. Properties/characteristics of textile fibres. Methods of fabric production (woven fabrics, basic weaves- plain weave, twill weave, satin weave), knitting, quilting, crocheting, lacing, bonding, netting, felting and lamination. Fabric finishes, purpose of fabric finishes, types of fabric finishes (beetling, calendaring, mercerization, sniggering, sizing, bleaching, carbonizing, abrasion resistant, shrinkage control, water-proof finish, moth proof,

mildew control). Types of fabrics (cotton, linen, wool, silk, rayon, acetate, nylon/polyamide, polyester and acrylic fabrics). Fabric combinations, blends and mixtures. Reasons for fabric combinations. Uses and care of different fabrics.

CLT 204: Creative Fabrics and Fashion Accessories (2 Units C: LH15; PH45)

Learning Outcomes

At the end of the course, students should be able to:

1. apply the knowledge of elements and principles of design in the construction of decorative items and outing accessories such as rugs, applique, stitchery, lace-work, soft toys and cushion, yarn on board, Beads on board, bags, hats, belts.

Course Contents

Conception of textile design as an art. The importance of using fabrics creatively. Theoretical application of principles and elements of design in the construction of applique, patchwork, tapestries, rugs, embroidery design, stitchery, lace-work, soft toys and cushion, macramé, yarn on board, beads on board. Design creation of different accessories such as bags using beads, buttons, fabrics. production of outing accessories such as earrings, bangles, bags, hats, belts, shoes for different outfits. Design and production of costume jewelleryes.

CLT 205: Principles and Techniques of Textile Design (2 Units C: LH15; PH45)

Learning Outcomes

At the end of the course, students should be able to:

1. describe textile design methods;
2. be aware of various dyes and dyeing techniques; and
3. produce designs on fabrics using various textile techniques such as weaving, printing, and resisting.

Course Contents

Theories, methods and practices in textile design and production, steps in designing and application. Various techniques in textile and guiding principles. Material procurement and management in textile. Designing methods in all textile techniques (weaving, printing, resisting and knitting). Dye types and different types of dyeing techniques. Pigments chemical and mixture for printing purposes. Tools identification and application. Meaning and history of printing and dyeing. Exploration of various techniques of printing and dyeing fabrics. Tools and materials needed for printing and dyeing. Differences and similarities between printing and dyeing. Precautions and safety in dyeing. Batik and Starch resist design. Fabric design by bleaching or discharge dyeing. Exploration of various environmental and traditional African design motifs for printed and dyed fabrics. Theoretical procedure of printing process-shape, print position and print thickness.

CLT 206: Computer Aided Design in Clothing and Textile (3 Units, C: LH15; PH90)

Learning Outcomes

On completion of the course, the student should be able to:

1. know computer software packages used in fashion illustration;
2. know the methods required to create and clothe a Croquis;
3. understand the processes required in the making motifs for fabric design;

4. know the importance of a well-prepared Technical Specification Sheet for production purposes;
5. know how to compile a comprehensive specification pack for production purposes;
6. know the processes required in the making of motifs for fabric design;
7. know how to use CAD to establish a design idea;
8. know how to apply computer technical skills to produce digital fashion illustrations/images and apply textures to them;
9. know how to apply computer technical skills to produce flat drawings for garments;
10. know how to produce industry standard technical information for spec sheets, design sketches and line plan; and
11. know how to effectively apply design concepts to create professional quality portfolio content using appropriate software.

Course Contents

Basic equipment and software used in CAD: Adobe Creative Cloud, Optitex, Graphic pad (wacom pads), Adobe Illustrator, Photoshop, CorelDraw. Interface Toolbox Basic Shapes Advance shapes Perfect Shapes Editing tools. Application of CAD in the Garment Production process: -illustration -flats/technical drawing -specification drawing -presentation and storyboards. The process of scanning and retouching illustrations: scan, clean, colour, and render paint hair, fabric, make seamless repeating patterns, work, with pattern fills, add texture. Vector illustration, techniques used to correct and enhance digital photographs. Photographic illustrations, photomontage/ compositing style fashion illustration. Illustration of the use curve lines, mirror objects, rotate objects and curve objects to create a skirt, blouse or t-shirt. Methods required creating and clothing a croquis. Construction of a male/ female/ children's croquis using measurement and scanned images. Application of computer technical skills to produce flat drawings for garments, the use of the vector software for creating flats. Different techniques employed in pattern design using CAD. Production of industry standard technical information for spec sheets, design sketches and line plan. Definition a Technical Pack, the components of a technical specification pack- flat sketch, measurement chart, order quantity cart, written description, Bill of Material (BOM), list of stitches and seams, list of embellishment, Branding Artwork (labels, care instructions), Measurement charts (grading), points of measurement diagram, Headers on every page, List for tracking change. The importance of a technical pack in production. Compilation of a technical spec pack for collection of styles, application of design concepts to create professional quality portfolio content using appropriate software. Professional fashion design portfolios, portfolio page layout basics including composition, type, and multiple colour presentation formats.

300 Level

GST 312- Peace and Conflict Resolution

(2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and

5. describe roles of international organisations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis.

ENT 312 – Venture Creation

(2 C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business

Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IOTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

CLT 300 – SIWES (15 Units C: PH 675)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IOTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

CLT 301: Interior Decoration and Design (2 Units C: LH15; PH45)

Learning Outcomes

On completion of the course, the student should be able to:

1. design living and work spaces, apply the principles and elements of design in interior decoration;
2. plan, design, and manipulate an interior layout;
3. select interior finishes and materials;
4. choose furniture and fixtures and select decorative elements; and
5. describe the ethical responsibilities of an interior decorator to clients.

Course Contents

General design theory fundamentals, such as design elements and principles, colour theories and principles, and theories of composition, as well as human factors and functional considerations that come into account when designing living and working spaces. Colour, use of surface materials and textures, work with textiles and accessories, source and select furniture. Characteristics of an interior decorator, furniture showrooms and home studio. Working with client's files, allied professionals, purchase orders. Application of design principles to interior decoration and arrangement of living space. Analysis, organisation and development of multi-functional spaces within living environment. Exploration of interior living environment, contemporary and traditional residential areas in an ecological, behaviour cultural context. The difference between two- and three-dimensional design elements and principles. Plan, design, and manipulate an interior layout, select interior finishes and materials, choose furniture and fixtures, and select decorative elements such as hardware, trim, art, and other accessories. Interior decorator's responsibility to clients, including ethical responsibilities, professional communication with both business and residential clients in order to ascertain client needs and help clients design spaces that are both functional and aesthetically pleasing. Project planning and client communication, design principles and factors a designer considers when working within a space.

CLT 303: Nigerian Clothing and Textile Industries

(2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. identify the factory procedures;
2. describe how to start a clothing and textile cottage industries;
3. write a business plan;
4. describe staff recruitment, training, motivation and remuneration; and
5. demonstrate marketing skills.

Course Contents

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

CLT 305: Fashion Drawing, Design and Modelling

(2 Units C: PH 90)

Learning Outcomes

At the end of the course, students should be able to:

1. draw fashionable styles for various figures suitable for various activities and occasion;

2. describe modelling types and tips;
3. build a modelling portfolio; and
4. organise fashion show/exhibition and pose or strut down the runway.

Course Contents

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

Meaning of fashion modelling, modelling principles and benefits; modelling categories/types, modelling tips, building a modelling portfolio, organising fashion show/exhibition, how to walk down the runway, and how to pose in front of the cameras.

CLT 307: Advance Weaving Techniques

(2 Units C: PH90)

Learning Outcomes

At the end of the course, students should be able to:

1. design pattern for woven fabrics as drafts at the preparatory level for actualising weaving on loom;
2. master the nitty-gritty of weaving dynamics on different looms;
3. identify the rudiments of weaving preparations such as winding, warping, and drawing;
4. practice and sharpen images on the woven fabric according to patterned drafts; and
5. know basic elements of weaving such as shedding, picking and beaten.

Course Contents

Execution of original designs, using different weaving techniques. Construction, warping and threading of looms. Tapestry, Paper making, Felting. Advanced aspect of different cloth weaving techniques. Creation of innovative weaving structure with the aid of computer programmes. The use of two harness and four harness looms for numerous variations of weaves. Techniques such as hand painted warps and pick up should be duly experimented on with execution of original designs, using different weaving techniques with the consideration for construction of different types of looms, warping and threading looms.

400 Level Clothing and Textiles Design

CLT 401: Textile Production

(2 Units C: PH90)

Learning Outcomes

At the end of the course, students should be able to:

1. describe the history of textiles;
2. produce paper design for fabric production;
3. produce fabrics using wood block printing, silk screen printing; and
4. be able to organise an exhibition. The students should pay a visit to a textile factory.

Course Contents

History of Textile, textile design materials and techniques; traditional, contemporary and exotic methods of textile design; Theories, methods and practices of textile in two dimensions; paper design for fabric reproduction for all textile production techniques, colour separation of paper work for exposure, (Negative and positive). Design work for all resist's method of fabric production with special emphasis on African traditional motifs. Transfer of colour separated paper works on mesh using different methods-hand application, photo chemicals. (Wood Block Printing, Silk Screen Printing, Roller Printing, Transfer Printing, Rotary Printing). Conversion of two-dimensional paper works to a functional textile product of all the techniques: printing (stencilling, screen, stamp). Resist (starch, batik, tie-dye, fold & dye, stitch & dye). Organising exhibition, tips to organizing an exhibition (Planning and Preparation, Budgeting, Location, Venue, Perks of the Venue, theme of the event, Consumer Interest, Marketing, send invites, publicise the event, logistics and transport, use of social media to promote the event, Following-Up); generating profits from exhibitions (sales of tickets, obtaining sponsors, selling exhibition space). Visits a textile factory.

CLT 402: Design Consultancy in Clothing and Textile

(2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. describe the types of clients and consultant relationship with clients;
2. grow small/medium enterprises; and
3. develop business plan and be able to develop effective financial plan for a clothing and textile business.

Course Contents

Types of clients and their needs. The designer consultant relationship. Case studies in solving design problems in the areas of textiles, clothing, housing and furnishings, and presentation of design solutions. X-ray of design consultancy, designing and project design and general qualities of a designer would be examined. The course will also address human resource management, product design and process selection. Growing small and medium enterprises, developing and components of business plan, entrepreneurship, competition and business, effective budgeting and financial planning for a clothing and textile business would be fully explained.

CLT 403: Textile and Fashion Marketing

(2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. describe fashion merchandising concepts and terminologies in fashion merchandising;
2. identify the principles and scope of fashion industries;
3. know the different environmental factors influencing the demand for textile and fashion;
4. describe assortment planning and the characteristics of Assortment plans;
5. describe the various strategies in sales promotion;
6. describe the roles of Fashion leaders and fashion followers; and
7. identify branding in fashion merchandising and fashion merchandising policies.

Course Contents

Definition of fashion merchandising and merchandising concepts and terminologies -(Fashion cycle, fashion trend, fashion design, fashion forecasting, fashion predictors, fashion image, fashion store image, fashion leader, fashion followers, couture mass fashion, fads.). The stages of fashion cycle, fashion cycle in relation to fashion innovation and diffusion. Theories of fashion diffusion. The roles of fashion leaders and fashion followers. The concept of fashions followership and reasons for followership. Fashion merchandising concepts: Merchandiser, market -target market, retailing demand, consumer education, market survey, inventory, assortment planner, Assortment planner, assortment planning, balanced assortment, characteristics of assortment plans- size - price - colours - seasons. Principles and scope of fashion industry, types of different merchandising in the fashion industry namely, retail, export and visual. The structure of fashion merchandising in the fashion industrial viz –strategies –buying, the intangibles of fashion, fashion as mirror of the time. Meaning of Environment, the components of environment and environmental factors (sociological factors, psychological factors and economic factors) that influence fashion interest and demand. Definition of sales promotion, strategies for promoting sales of fashion merchandise – (Advertising, display, personal selling, direct marketing, publicity). The skills needed to succeed in the competitive fashion/ garment production- (Marketing skills, Production skills, communication and inter personal skills, creativity with great sense of style, good eye for materials, strong visualization abilities). Definition of branding in fashion merchandizing, the relevance of branding in fashion industries. Areas of Branding- (Customer profiling, Building a brand, Luxury brands, Brand promotion, Brand protection). Relevance of store image and fashion image to the fashion Merchant. Online marketing. Definition of policy, types of policies in relation to fashion merchandising. Effect of policies on fashion merchandising.

CLT 404: Advance Construction and Tailoring Techniques (3 Units C: LH15; PH90)

Learning Outcomes

At the end of the course, the student should be able to:

1. describe fitting techniques;
2. identify suitable styles for various figures and occasion;
3. alter/repair/renovate garment; and
4. line a garment suitably.

Course Contents

The body contour, art of fitting. Fitting techniques, importance of grain line in fitting. Suitable styles for various figures. Figure problems. Methods of alteration on sewn garments. Techniques of repair and renovation of sewn garments- mending/darning, patching, reconstruction. Practical exercise in sewing of fitted garments for various figures and age. Practical exercise in repair, renovation of sewn garments and patchwork. Tailoring techniques on special fabrics such as stripes, velvet, chiffon. Methods of lining a garment. Modelling- principles and benefits. Practical application of the knowledge gained in construction class through individual creativity and the production of original designs and presentation of finished articles for various events. Construction of suitable styles for various members of the family, groups or societies suitable for various activities and occasion. Production of household articles, souvenirs and uniforms. Modelling of garments produced.

CLT 405: Research Methods in Clothing and Textile

(2 Units C: LH30)

Learning Outcomes

At the end of the course, the student should be able to:

1. describe the purpose of research, research types and procedure; and
2. apply the knowledge to conduct their research project.

Course Contents

Research meaning, purpose and research types. Key elements of research methods and procedures, definition of research problems, stating objectives research hypothesis, literature review and reference citation, materials to be consulted for literature review, acknowledging sources of information, research methodology – Research design, area of study, population of study, sample size and various sampling techniques, method of data collection, post study validity and reliability of instrument, types of validity and reliability of instrument, types of validity and reliability method of data analysis, presentation of results, dissension of findings, summary, recommendation and conclusion. Reference and appendix. Introduction. Definition of research, steps in research process, differentiation between social, and natural science variables and concepts in theory building.

CLT 406: Pattern Drafting and Design

(2 Units C: PH90)

Learning Outcomes

At the end of the course, the student should be able to:

1. adapt basic blocks for advanced styles.

Course Contents

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

CLT 407: Entrepreneurship Education in Clothing and Textile (2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. describe the traits, skills, attitudes and drive necessary to be a successful entrepreneur; and
2. Identify personal strengths and weaknesses matching the profiles of successful small business owners.

Course Contents

Meaning of entrepreneurship; theories of entrepreneurship; characteristics of entrepreneurs; generating business ideas; Entrepreneurial attributes, traits and skills for success. Feasibility analysis and Customer identification. Definition and principles of consumer education. An analysis of economic forces affecting individuals and facilities as consumers of goods and services. Creating awareness of the rights and responsibilities of consumers in the market place, developing aids and techniques for making intelligent choices of goods and services. Political, social, economic and legal implications of consumer decisions and actions.

CLT 497: Seminar I (Pre-Data) (1Units C: LH15)

Presentation of final year Pre-Data projects by students.

CLT 498: Seminar II (Post-Data) (1 Units C: LH15)

Course Contents

Presentation of final year post-Data projects by student.

CLT 499: Project (4 Units C: PH180)

Course Contents

Each student will submit report of his/her project based on original research work carried out under staff supervision. Where applicable, original design of pro-type pattern drafting, clothing construction, fabric design, will be presented in addition.

Minimum Academic Standards

Textile Equipment

Dye Stuffs of various colours

Chemicals and reagents

Printing inks of various colours

Printing machine

Digitiser

Printing Tables

Weaving looms

Weaving threads

Wax

Gloves
Stoves
Gas Cooker and Cylinders
Dye Baths
Buckets and bowls
Cassava Flour
Mesh
Brushes
Screen
Water tank
Sketch Pads/Drawing books
Light box
Laboratory coats
Squeegees
Tracing paper

Staffing

Personnel

The personnel requirements for the programme should reflect students' population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Library

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories Clinics Workshops and Offices

	Space	Use	Minimum (m ²)
17.	Professors Office	Academic	24
18.	Head of Department	Administration	24
19.	Senior Lecturer	Academic	20
20.	Lecturer	Academic	16
21.	Assistant Lecturer	Academic	12
22.	Senior Technical Staff	Technical	12
23.	Senior Administrative Staff	Administration	12
24.	Junior Technical Staff	Technical	10
25.	Junior Administrative Staff	Administration	10
26.	Studio Space	Students	30
27.	Lecture Space	Students	75
28.	Seminar Space	Students	30
29.	Laboratory Space	Students	30
30.	Library	Students	35
31.	Social Space	Students	40
32.	Storage Space	Students	30

Laboratories

1. Pattern Drafting Laboratory
2. Clothing Construction Laboratory
3. Textile Laboratory with dark room
4. Weaving Laboratory
5. Drawing studio
6. Dyeing studio
7. Exhibition Room
8. Store
9. Departmental Library
10. Offices
11. Lecture rooms/ Classrooms
12. Staff Offices

Laboratory Equipment

1. Pattern Drafting Tables
2. Stools
3. Ironing Boards

4. Dry and Steam irons
5. Varieties of notions (sewing and embroidery threads, zips, buttons, lace, ribbon, appliqués)
6. Fitting room/ cubicle
7. Full-length mirror
8. Brown papers
9. Knitting machines
10. Fashion Card Software
11. Hand, treadle, electric and industrial Sewing machines
12. Over locking machines
13. Embroidery machines
14. Electric Cutter
15. Stoning Machines
16. Mannequins
17. Thimbles
18. Tracing wheel
19. Long Rulers
20. French Curves
21. Varieties of Scissors
22. Fabrics
23. Fashion Catalogues

B. Sc / B. Tech. Environmental Management

Overview

The Environmental Management programme is to provide a guideline for the description and characterization of the degree programme as well as to articulate the abilities and skills expected of graduates of Environmental Management. In the context of Nigerian Universities, a five-year degree programme leading to a professional Bachelor's degree is envisaged. The benchmark statement takes into consideration, current developments in the environmental Science discipline in general and in Environmental Management in particular. Bodies of knowledge in the areas of Environmental Impact Assessment, Pollution control, Entrepreneurship, Information Technology, Planning, Health and Safety, Hazard and Disaster, and Facilities Management have been incorporated to cater for these developments.

Philosophy

The philosophy of the programme is in the training of personnel from a wide range of disciplines and backgrounds, to the highest academic standard in the identification and resolution of environmental issues, challenges, and planned actions or interventions. The programme will provide skilled manpower, trained specifically for environmental surveillance, monitoring, planning and management as against the present practice where these tasks were performed by people trained in Basic and Applied Sciences.

It is focused on the formulation, manipulation, designing, planning implementation and monitoring of land use patterns and policy programmes and projects and their likely effects on the well-being of various aspects of the environment.

The overall national goal for environmental resource management education can be stated in general terms as follows:

1. To provide a broad-based education and training which will assist in developing the students' intellectual and professional capabilities to a high standard; and
2. To produce a sound specialist professional environmentalist who can operate effectively in the field of environmental issues and related activities.

Objectives of Environmental Management Programme

The specific objectives of Environmental Management programme are:

1. to promote academic excellence through training of technocrats and functional environmental managers, planners, designers, implementers, and analysts capable of managing the environment based on the concept of sustainable development;
2. create in the students an awareness and comprehension of the range of environmental challenges and opportunities in the immediate and wider region;
3. provide a comprehensive knowledge of management systems, legal framework and social/cultural issues pertaining to utilization of natural resources;
4. develop skills and knowledge for translating the theory and concepts of resource and environmental management into practice relevant to communities and workplaces today;
5. create knowledge about geophysical and biological processes and constraints characterizing human activities and their interaction with the environment; and

6. develop skills in the application of monitoring and environmental management tools used by resource and environmental practitioners.

Employability Skills

There are numerous career opportunities in the field of environmental management. Graduates with a degree in Environmental Management can start their career in public sector or in human resource management since they receive enough management and communications skills. The following are some of the top job opportunities for a graduate of environmental management:

1. Amenity horticulturist.
2. Commercial horticulturist.
3. Environmental consultant.
4. Environmental education officer.
5. Environmental engineer.
6. Environmental manager.
7. Horticultural consultant.
8. Marine biologist
9. Nature conservation officer
10. Recycling officer
11. Sustainability consultant
12. Waste management officer
13. Water quality scientist

21st century skills

1. Critical thinking
2. Creativity
3. Collaboration
4. Communication
5. Information literacy
6. Media literacy
7. Technology literacy
8. Flexibility
9. Leadership
10. Initiative
11. Productivity
12. Social skills

Unique Features of the Programme

1. it enables humans to understand the structure and function of the earth system, as well as the ways in which they relate to their environment;
2. it promotes safe keeping of soil, water and air for humans and wildlife;
3. it also enables humans to rationally adjust with nature, that is to judiciously exploit and utilize natural resources without distorting the ecosystem balance and equilibrium;
4. environmental management facilitates socioeconomic developments on one hand and the maintenance of environmental quality on the other; and
5. the course promotes optimal allocation of scanty resources in the economy, ensures health and safety within the workplace, serves as an index for pollution control in corporate bodies, helpful in discharging organizational accountability, increasing environmental transparency

and supports green reporting to combat effectively all negative public opinions in the global economy.

Admission and Graduation Requirements

Admission Requirements: Admission into the programme may be through any of the following modes:

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Chemistry, Geography and any other one subject from the following list; Biology, Physics, Technical Drawing, Fine Arts, Economics, and Agriculture, will be eligible for admission through the Unified Tertiary Matriculation Examinations (UTME).

Direct Entry Admission: Candidates who fulfil the UTME admission requirements and who have obtained G.C.E Advanced Level, HSC/IJMB or equivalent passes in Biology and Geography and any other subject from Physics or Mathematics may be admitted at the 200 level of the programme.

Graduation Requirements: The minimum total credit units required for graduation is 150 and 120 units for UTME and direct entry students respectively. In order to graduate, a student must pass all compulsory courses. Environmental Management training programme is expected to last a minimum of 10 and 8 academic semesters for UTME and direct entry candidates respectively. The maximum duration for UTME and Direct Entry are 15 and 12 academic semesters respectively. Six months of Students' Work Experience shall be incorporated in the programme.

Global Course Structure

100-LEVEL

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
MTH 101	General Mathematics I	3	C	45	-
MTH102	General Mathematics II	3	C	45	-
CHM 101	General Chemistry I	3	C	45	-
CHM 102	General Chemistry II	3	C	45	-
EVM 101	Introduction to the Built Environment	2	C	30	-
EVM102	Introduction to Natural Environment	2	C	30	-
	Total	20			

200 level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
STA 208	Statistics for Physical Science and Engineering	2	C	30	-
EVM 201	Natural Ecosystems	3	C	45	-
EVM 202	Introduction to Environmental Management or Element of Environmental Management	3	C	45	-
EVM 203	Economics of Environmental Management	3	C	45	-
EVM 204	Environmental Problems	2	C	45	-
EVM 206	Introduction to Valuation	2	C	15	45
EVM 208	Environmental Psychology and Perception	2	C	30	
	Total	21			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT312	Venture Creation	2	C	30	
EVM 302	Environmental Protection	3	C	45	-
EVM 306	Population and Environmental Change	2	C	30	-
EVM 307	Land degradation and Restoration Ecology	2	C	15	45
EVM 308	Computer Application in Environmental Management	3	C	30	45
EVM309	Environmental Law and ethics	3	C	45	-
EVM313	Landscaping and Environmental Design	2	C		90

EVM 315	Energy and Environment	2	C	30	
	Total	21			

400 level

COURSE Code	Course Title	Units	Status	LH	PH
EVM 401	Research Method I	3	C	45	-
EVM 402	Waste Management	3	C	15	90
EVM 405	Environmental and Planning Law	2	C	30	-
EVM 406	Resource Use and Conservation	2	C	30	-
EVM 409	SIWES	15	C		675
EVM 411	Project Design and Evaluation	2	C		90
EVM 412	Environmental Management Systems	3	C	15	90
EVM 414	Experimental Pesticide Chemistry and Residue Analysis	2	C	15	45
	Total	32			

500 level

COURSE Code	Course Title	Units	Status	LH	PH
EVM 501	Research Method II	3	C	45	
EVM 502	Project Dissertation	6	C	-	270
EVM 507	Environmental Management Seminar	3	C	-	135
EVM 508	Environmental Impact Assessment	2	C	15	45
EVM 510	Environmental Engineering Services	2	C	15	45
EVM 511	Environmental Monitoring and Audit	2	C	15	45
EVM 515	Environmental Biotechnology	2	C	30	-
	Total	20			

Course Contents and Learning Outcomes

GST 111: Communication in English

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing , Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and Mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building;
6. analyse the role of the Judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematic I (Algebra and Trigonometry) (3 Units C: LH45)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of Set, Subset, Union, Intersection, Complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using Binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus) (3 Units C: LH45)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration.
2. describe the meaning of Function of a real variable, graphs, limits and continuity.
3. solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

CHM 101: General Chemistry I (3 Units C: LH45)

Learning Outcomes

At the end of this course, the students should be able to:

1. define atom, molecules and chemical reactions;
2. discuss the Modern electronic theory of atoms;
3. write electronic configurations of elements on the periodic table;
4. rationalize the trends of atomic radii, ionization energies, electronegativity of the elements based on their position in the periodic table;
5. identify and balance oxidation – reduction equation and solve redox titration problems;
6. draw shapes of simple molecules and hybridized orbitals;
7. identify the characteristics of acids, bases and salts, and solve problems based on their quantitative relationship;
8. apply the principles of equilibrium to aqueous systems using LeChatelier's principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures;
9. analyse and perform calculations with the thermodynamic functions, enthalpy, entropy and free energy; and
10. determine rates of reactions and its dependence on concentration, time and temperature.

Course Contents

Atoms, molecules, elements and compounds and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization and shapes of simple molecules. Valence Forces; Structure of solids. Chemical equations and stoichiometry; Chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.

CHM 102: General Chemistry II (3 Units C: LH45)

Learning Outcomes

At the end of this course, the students should be able to:

1. state the importance and development of organic chemistry;
2. define fullerenes and its applications;
3. discuss electronic theory;
4. determine the qualitative and quantitative of structures in organic chemistry;
5. state rules guiding nomenclature and functional group classes of organic chemistry;
6. determine rate of reaction to predict mechanisms of reaction;
7. identify classes of organic functional group with brief description of their chemistry;
8. discuss comparative chemistry of group 1A, IIA and IVA elements; and
9. describe basic properties of Transition metals.

Course Contents

Historical survey of the development and importance of Organic Chemistry; Fullerenes as fourth allotrope of carbon, uses as nanotubules, nanostructures, nanochemistry. Electronic theory in organic chemistry. Isolation and purification of organic compounds. Determination of structures of organic compounds including qualitative and quantitative analysis in organic chemistry. Nomenclature and functional group classes of organic compounds. Introductory reaction mechanism and kinetics. Stereochemistry. The chemistry of alkanes, alkenes, alkynes, alcohols, ethers, amines, alkyl halides, nitriles, aldehydes, ketones, carboxylic acids and derivatives. The Chemistry of selected metals and non-metals. Comparative chemistry of group IA, IIA and IVA elements. Introduction to transition metal chemistry.

CHM 107: General Chemistry Practical I (1 Unit C: PH45)

Learning Outcomes

At the end of this course, the students should be able to:

1. state the general laboratory rules and safety procedures;
2. collect scientific data and correctly carrying out Chemical experiments;
3. identify the basic glassware and equipment in the laboratory;
4. state the differences between primary and secondary standards;
5. perform redox titration;
6. recording observations and measurements in the laboratory notebooks; and
7. analyse the data to arrive at scientific conclusions.

Course Contents

Laboratory experiments designed to reflect topics presented in courses CHM 101 and CHM 102. These include acid-base titrations, qualitative analysis, redox reactions, gravimetric analysis, data analysis and presentation.

CHM 108: General Chemistry Practical II (1 Unit C: PH45)

Learning Outcomes

At the end of this course, the students should be able to:

1. state the general laboratory rules and safety procedures;
2. collect scientific data and correctly carrying out Chemical experiments;
3. identify the basic glassware and equipment in the laboratory;
4. identify and carry out preliminary tests which includes ignition, boiling point;
5. melting point, test on known and unknown organic compounds;
6. carry out solubility tests on known and unknown organic compounds; and
7. carry out elemental tests on known and unknown compounds.

Course Contents

Continuation of CHM 107. Additional laboratory experiments to include functional group analysis, quantitative analysis using volumetric methods. Carry out functional group/confirmatory test on known and unknown compounds which could be acidic / basic / neutral organic compounds.

PHY 111: General Physics I (Mechanics)**(2 Units C: LH30)****Learning Outcomes:**

At the end of this course, the students should be able to:

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum.
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time; units and dimension, Vectors and Scalars, Differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton laws of motion (Inertial frames, Impulse, force and action at a distance, momentum conservation); Relative motion; Application of Newtonian mechanics; Equations of motion; Conservation principles in physics, Conservative forces, conservation of linear momentum, Kinetic energy and work, Potential energy, System of particles, Centre of mass; Rotational motion; Torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; Circular motion; Moments of inertia, gyroscopes and precession; Gravitation: Newton's Law of Gravitation, Kepler's Laws of Planetary Motion, Gravitational Potential Energy, Escape velocity, Satellites motion and orbits.

PHY 112: General Physics II (Behaviour of Matter)**(2 units C: LH30)****Learning Outcomes**

At the end of this course, the students should be able to:

1. explain the concepts of heat and temperature and relate the temperature scales;
2. define, derive, and apply the fundamental thermodynamic relations to thermal systems;
3. describe and explain the first and second laws of thermodynamics, and the concept of entropy;
4. state the assumptions of the kinetic theory and apply techniques of describing macroscopic behavior;
5. deduce the formalism of thermodynamics and apply it to simple systems in thermal equilibrium; and
6. describe and determine the effect of forces and deformation of materials and surfaces.

Course Contents

Heat and Temperature, Temperature scales; Gas laws; General gas equation; Thermal conductivity; First Law of thermodynamics; heat, work and internal energy, reversibility; Thermodynamic processes; adiabatic, isothermal, isobaric; Second law of thermodynamics; heat engines and entropy, Zero's law of thermodynamics; kinetic theory of gases; Molecular collisions and mean free path; Elasticity; Hooke's law, Young's, shear and bulk moduli; Hydrostatics;

Pressure, buoyancy, Archimedes' principles; Bernoulli's equation and incompressible fluid flow; Surface tension; adhesion, cohesion, viscosity, capillarity, drops and bubbles.

EVM 101: Built Environment (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the nature of built environment;
2. know economic production systems and the factors influencing them; and
3. learn how to measure urban environmental quality.

Course Contents

This course introduces the students to the concept of built environment, which arises through the development activities of the human person. Students would be informed about the number and quality of the world's people and the conditions of their cities, farms, factories, roads. and how to grow at the expense of the natural environment and impact on the environment as a whole. The course will also examine the economic production systems and the factors influencing them as well as how they promote or degrade the quality of the environment, urban utilities, and index of measuring urban quality.

EVM102: Introduction to Natural Environment (2 Units C: LH30)

Learning Outcomes:

At the end of this course, students should be able to:

1. know the concept and components of natural environment;
2. examine factors affecting natural environment; and
3. know the issues and challenges of natural environment.

Course Contents

The course identifies what constitutes the natural environment, which can be aggregated into land (and all that is on it: landform, vegetation, soil and animals), water (and what resides in it: fish, organisms as well as related issues such as saline and fresh water) the atmosphere and climate (strata, composition, circulation). It examines the distributions of these constituents all over the world and the factors influencing growth and/or development and their global distribution as well as the changes in them brought about by human activities.

200 level

GST 212- Philosophy, Logic and Human existence (2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concept of humanity, its origin, philosophy and cosmic environment;
2. improve their logical and critical thinking skills;
3. identify the basic roles of science and technology in human society;

4. describe renewable and non-renewable environmental resources available in the Nigerian society;
5. identify resource conservation tools and techniques for sustainable environment;
6. analyse environmental effects of plastics, and other wastes;
7. suggest possible management techniques and solutions to identifiable environmental challenges faced in different areas of the Nigerian society; and
8. list and describe unethical behaviour patterns that are capable of hindering human societal growth and development.

Course Contents

Concept of humanity, its origin, philosophy and cosmic environment. Concepts and techniques in logic and critical thinking. Science and technology in human society and services. Renewable and non-renewable environmental resources. Climate change and the principle of sustainable development. Environmental effects of plastics, and other waste products. Elements of environmental studies for productive, safe and healthy living. Environmental Challenges - urbanisation, environmental pollution and degradation, soil erosion, desert encroachment, soil degradation and flooding. National Development Plans towards sustainable environment. Trends in global action towards environmental sustainability.

ENT 211 Entrepreneurship and Innovation

(2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking;
2. state the characteristics of an entrepreneur;
3. know the importance of micro and small businesses in wealth creation, employment, and financial independence;
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intreprenurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and join ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women

entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

STA 208 Statistics for Physical Science and Engineering (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the empirical relation between means, median, and mode relationship and absolute dispersion;
2. know and relate finite probability space; properties of probability statistical independence and conditional probability; and
3. learn how to use statistical tool in measuring and analyse environmental variables.

Course Contents

Measures of central tendency and dispersion (grouped and ungrouped): mean-arithmetic, geometric, median, mode, qualities, deciles and percentiles. Empirical relation between means, median, and mode relationship and absolute dispersion. Simple space and events as sets. Finite probability space; properties of probability statistical independence and conditional probability. Tree diagram. Bayes theorem. Discrete and continuous random variables. Expectation. Independent Bernoulli trials. Binomial distribution and normal distributions. Normal approximation to binomial and Poisson distributions. Hyper geometric.

EVM 202: Elements of Environmental Management (3 Units C: LH45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the elements of environmental management;
2. know the types and causes of major environmental issues; and
3. learn how to reduce and prevent occurrences of pollution in air, water and land.

Course Contents

Introduces environmental issues, regulations, and types of pollutants. Covers issues related to air pollution, including how air pollution can be controlled and the quality of indoor air. Discusses the problems of pollution in water and methods to control it. It also examines the different types of solid waste, such as hazardous, medical, and nuclear, as well as treatment techniques for each; focusing on pollution prevention in areas such as health, safety, and accident prevention; energy conservation; and waste reduction. It also examines how environmental risks are perceived and communicated, and how individuals can be educated about them

EVM 203: Economics of Environmental Management (3 units C: LH45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the nature of land and its potentials;
2. explain factors influencing use of land as a resource and its value; and
3. know the processes involved in land development.

Course Contents

Land as a scarce and exhaustible resources. Location theory, economic basis of urbanization, conflicting and competing demands for land use and conservation. Relationship between land use and land value. Effect of land use and land value on the operation of price mechanism. The process of land development economics of real estate, nature and function of the urban property, urban area, financial development and economic concepts.

EVM 206: Introduction to Valuation

(2 Units C: LH15; PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the nature and definition of value;
2. know the constitutional, geographical, environmental, political and legal basis of property value; and
3. know the structure and environmental surveys and reports for valuation.

Course Contents

The nature and definition of value; definition and purpose of valuation; the function of value economic, Constitutional, geographical, environmental, political and legal basis of property value. The effect of the international situation. The capital market and the principles governing interest rates and yield market analysis. Structure and environmental surveys and reports for valuation; the mathematical background and construction of valuation table.

EVM 208: Environmental Psychology and Perception

(2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. learn basic environmental psychology concepts;
2. learn human behaviour influences quality of environmental well-being; and
3. explain the interaction between humans and environment.

Course Contents

The scope and objectives of psychology: basic environmental psychological concepts; ecological psychology; perception, viewing cognition, mental map, environmental images; stress/strain associated with noise, overcrowding, pollution, insanitary conditions; environmental perception and behaviour, experience and imagination; behavioural classification of environment; concepts of social interaction – personal space, personal construction theory; theory of privacy, need and conservation. Origins of the perceived environment and approaches to environmental perception; environmental perception and human behaviour; environmental assessment techniques; the quality of the environment and space perception, environmental preferences and decision making; perceptual and behavioural classification of environment; and environmental decision.

300 level

GST 312- Peace and Conflict Resolution

(2 Units C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy among others*. Digital Business and E-Commerce Strategies).

EVM302: Environmental Protection

(3 Units C: LH45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the causes and techniques of preventing and controlling soil erosion;
2. learn reclamation techniques for degraded land; and
3. know the role of bioremediation in correcting environmental damage.

Course Contents

Soil erosion: causes, prevention and control technique (such as tree planting, use of sustainable farming system and so much more). Reclamation techniques for degraded mine sites, sand dune management (sand dune fixation with indigenous, and exotic plant species), zone afforestation and reforestation programmes. Reclamation/Rehabilitation of wetland, shelter belt establishment and management, micro and macro climatic applications.

EVM304: Quantitative Techniques in Environmental Management (3 Units C: LH45)

Learning Outcomes

At the end of this course, students should be able to:

1. learn descriptive and basic inferential techniques;
2. know how to test relationships between variables; and
3. learn forecasting techniques and limitations in planning practice and research.

Course Contents

Review of descriptive and basic inferential techniques. Hypothesis testing. Bivariate linear correlation and regression. Analysis of variance. Multiple linear correlation and regression. Principal components and factor analysis. Forecasting techniques. Possibilities and limitations in planning practice and research.

EVM306: Population and Environmental Change (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the components of the environment and the interaction among them; and
2. know the implication of human population growth on environment.

Course Contents

Components of the environment, the interaction among components, types of ecosystems, ecosystem and habitats; population and environmental change. Population growth, distribution patterns, population trend and environment.

EVM308: Computer Application in Environmental Management (3 Units C: LH30; PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the basic techniques of map making;
2. learn the scope and limitations of visual presentation of statistics sources; and
3. know the role of computer in gathering environmental data.

Course Contents

The basic techniques of map making, the use of variety of cartographic and other devices for mapping and gathering environmental data; scope and limitations of the visual presentation of statistics sources. Scale and error factors, map design, the logic of conceptual diagrams including system diagrams.

EVM311: Tourism Development Planning (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the concept of recreation and tourism development;
2. learn the techniques of administration and management of recreation and tourism; and
3. know the attributes and categorization of recreation and tourism resources.

Course Contents

To advance the knowledge of recreation and (R&T), attributes and categorization of (R & T) resources, infrastructure services and participation, socio-economic evaluation and the ecological impacts. Definition and Concept. Nature and classification of tourism resources and recreational land uses. Water base (R&T) Land base (R&T). Urban and Rural distributions Infrastructure and

services. Administration and Management of (R & T). The positive and negative impacts of Recreation and Tourism.

EVM313: Landscaping and Environmental Design (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the concept of landscaping;
2. learn methods and approaches of environmental designs; and
3. know current ideas and innovations in landscaping and environmental design

Course Contents

Concepts in landscape and environmental design - Basic elements of landscape - Climate and landscape design - Landscape design goals, processes and analytical methods - Landscape construction materials and methods - Planting design - Management of landscape in the context of environmental planning. Current innovation in landscape and environmental design (great green wall project) will be examined.

EVM314: Principles of Low Carbon Society (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. critically know the science and diverse views on carbon emission;
2. know the effect of carbon emission on Global warming;
3. learn the approaches in achieving low carbon society; and
4. learn the strategies of establishing more carbon sinks and identification of methods to be adopted.

Course Contents

This course exposes students to the science of, and the debates on carbon emission. The fact that carbon emission is the greatest contributor to greenhouse gases (GHG) that eventually accumulate in the atmosphere leading to global warming. Apart from the direct emission, the reduction in carbon sinks through the removal of vegetation enhances the accumulation of the GHG. It will argue that there are two approaches to achieve a low carbon society: reducing carbon emission and establishing more carbon sinks; identification of methods to be adopted for both approaches.

EVM315: Energy and Environment (2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the types and sources of energy;
2. learn the effect of energy on environment and socio-economic cost; and
3. learn the methods and strategies of renewable energy generation and development.

Course Contents

Energy and power, demand, principles and outlook: The cost of transformation of energy. Thermal pollution, electrical energy from fossil fuels. Hydroelectric power generation. Cost, capacity, storage, reserves, efficiency and environmental effects of these. Electrical energy from

nuclear reactors. Prospects for the future through the promise (and problems) of breeder reactors, fusion power, solar power, geothermal, tidal and wind power among others.

400 level

EVM401: Research Method I (3 Units C: LH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the role of research in environmental management and ways to undertake research;
2. learn how to formulate aim and objectives of a research project;
3. learn the basic scientific approach to Environmental research; and
4. know the basic quantification and classification in environmental management research.

Course Contents

Identifying potential research areas. Literature review: elements, structure, and importance
Formulating aims and objectives. Types and sources of data for research in Environmental management: Past projects records; Surveys; Laboratory investigations. Understanding of the role of research in Environmental Management and ways to undertake research. Current methodology of Environmental management research, including: recent paradigm shifts within scientific approach to Environmental research, quantification and classification in Environmental management; theories and models in Environmental management.

EVM402: Waste Management (3 Units C: LH 15; PH 90)

Learning Outcomes

At the end of this course, students should be able to:

1. know the impact of various pollutants with emphasis on atmosphere, water and soil;
2. learn methods of abatement and control of solid waste;
3. know the techniques of treatment, disposal and management of sewage; and
4. learn the method of site investigation for planning utilities public health laws.

Course Contents

To make students aware of the impact of various pollutant with emphasis on atmosphere, water and soil: Environmental monitoring system. Abatement and control of solid waste. Refuse dump site, treatment and land fill. Treatment, disposal and management of Sewage. Management of solid waste, collection and disposal. Method of site investigation for planning utilities public health laws in Nigeria – case study.

EVM404: Parks and Open Space Planning and Management (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. learn the techniques of planning and management of parks and open spaces;
2. learn the strategies of utilizing and developing of marginal lands; and
3. know the importance of parks and open space in recreational development.

Course Contents

Parks Surveys, sitting and construction of roads and tourist facilities and supervisor of anti-poaching control. Open space for flood control, for future development, development control and for recreation.

EVM405: Environmental and Planning Law (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the nature and scope of Urban and Regional Planning Law;
2. learn the disposition of planning authorities and development control; and
3. acquaint with the Acts relating to highways, public health and industrial location.

Course Contents

The origin of urban and regional planning law in Nigeria; Its nature, scope and contents in the framework of the Nigerian judicial system. The course also exposes students to the powers and duties of the planning authorities; planning schemes development control, acquisition and disposal of land for planning scheme – compensation and betterment. The structure and working of the Nigerian legal system. The courts and their procedure, tribunals and inquiries, reference to courts for decision in any matter affecting a planning scheme and legal proceedings. Acts relating to highways, public health and industrial location.

EVM406: Resource Use and Conservation (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. know what constitute resource;
2. learn the different strategies of resource use and exploitation;
3. know the ecological implication of over exploitation of natural resources; and
4. learn numerous techniques of resource conservation.

Course Contents

Natural resources; uses of natural resources, exploitation of natural resources and environmental/ecological implications of threatened/endangered natural resources i.e., forest and wildlife species. Sustainable use of natural resources including conservation strategies.

EVM411: Project Design and Evaluation (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. know key issues in project design and evaluation;
2. learn the techniques of cost benefit analysis;
3. learn the skills of ecological planning and design; and
4. learn the techniques of establishing database for monitoring and evaluation, overview of project conception and implementation.

Course Contents

Themes in project design such as project conception, designing, document and proposal are the key issues addressed by this course. Other issues include Environmental valuation techniques in cost and benefit analysis and ecological planning and design at national, regional and local levels are also examined. Activities such as project administration and financing, project building, follow-ups and lobbying techniques, legal and technical steps and issues in project uncertainties are equally covered. Techniques in establishing database for monitoring and evaluation, overview of project conception and implementation in developing countries along with their problems and prospects are also reviewed.

EVM412: Environmental Management Systems

(3 Units c: LH 15; PH 90)

Learning Outcomes

At the end of this course, students should be able to:

1. know the impacts organizations have on environment and respective responses;
2. acquire the skills of applying the EMS tool (Environmental Management System) in managing organizations significant environmental impacts; and
3. know different types of standardized environmental management system.

Course Contents

The course explores the impacts organizations have on the environment and the ways they can respond to protect themselves and the environment. The use of Environmental Management System EMS as a tool for managing organizations significant environmental impacts is introduced.

The course also introduces the different types of standardized environmental management system such as the British Standards Institutions BSI 7750, European Commissions, Eco-Management and Audit Scheme EMAS, the International Organization for Standardizations ISO 14001. The different elements of an EMS are also highlighted.

EVM414: Experimental Pesticide Chemistry and Residue Analysis

(2 Units C: LH 15 PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. learn Extraction and clean-up methods and instrumentation for pesticide analysis;
2. know the techniques of Pesticide formulation analysis; and
3. know the effect of pesticide on growth and yield of crops, control of pests and diseases, and insect resistance probit analysis.

Course Contents

Sampling, planning the sampling programme, sample containers, collection of various environmental samples – water solid sediments, vegetation, blood, milk, fish, invertebrate birds, mammals, air. Sample Preservation: Extraction and cleanup methods, instrumentation for pesticide analysis, use of gas chromatograph for determination of pesticide residues, Analytical quality assurance; recovery and precision studies. Pesticide formulation analysis. Experimental designs and field/greenhouses trials on effect of pesticide on (a) growth and yield of crops (b) control of pests and diseases. (c) insect resistance probit analysis. Screening of Nigerian herbs

for pesticide activities. Isolation and characterization of active ingredients in Nigerian herbs. Maintenance, trouble shooting and calibration of instruments

EVM409: SIWES (15 Units C: PH 675)

Learning Outcomes

At the end of this course, students should be able to:

1. know with the major activities taking place in the places of attachment;
2. gain practical knowledge and experience on multitudes exercise and activities; and
3. develop innovative ability and entrepreneur skills.

Course Contents

Students are supposed to get familiar with the major activities taking place in their places of attachment. Depending on the nature of their places of attachment, they are to participate in activities like map making, planning practices land, soil and water resources evaluation; human and socio-economic surveys, basic operation of field and laboratory equipment and facilities, practical and operational climatology, instrumentation in geography; and any other assignment given to them by their industrial based Head of Department. Report on the entire exercise/ experience.

500 Level

EVM501: Research Methods II (3 Units C: LH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. research methods and methods of data collection;
2. learn the basic procedures in laboratory measurement and analysis;
3. learn methods of data analysis and interpretation of results; and
4. acquire communication skills and oral presentation of research project.

Course Contents

Qualitative and quantitative research methods of data collection. Interview; types, objectives, recording. Questionnaire types, development. Design of experiments (laboratory procedures). Description of materials and methods in experimental research. Hypothesis; formulation of hypothesis; testing of hypothesis; concept of significance. Methods of data analysis; types, choice and description. Interpretation of data analysis results. Computer based analysis. Referencing and bibliography. Communication skills and oral presentation (defence) of research projects

EVM502: Project Dissertation (6 Units C: PH 270)

Learning Outcomes

At the end of this course, students should be able to:

1. know research work with minimum supervision;
2. make contribution to knowledge; and
3. acquire communication skills and oral presentation of research project.

Course Contents

The student is expected to undertake research work on any chosen topic as a special area of study as it pertains to the environment and environmental management. Students are required to demonstrate ability for individual research techniques, making contribution to knowledge with some guidance of an academic staff throughout the project. The examination will be conducted with a viva, which will be attended by the external examiner.

EVM507: Environmental Management Seminar

(3 Units C: PH 135)

Learning Outcomes

At the end of this course, students should be able to:

1. acquire communication skills and oral presentation of research project.

Course Contents

Students are expected to choose topics on issue relating to the environment and make a presentation of the chosen topic.

EVM508: Environmental Impact Assessment

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the basic steps involved in EIA process;
2. learn the techniques and skills of conducting EIA;
3. know EIA legal framework;
4. know the role of EIA in achieving the goals of environmental management; and
5. know the challenges of EIA practice in the developing countries and way forward.

Course Contents

Environmental impact of human actions. Response of society to environmental changes. Bio-geophysical and socio-economic impacts. Administrative procedures in planning/decision making of environmental impact assessment (EIA). Contents of EIA. Methods for identifying, predicting and interpreting impacts/effects and inspection procedures. Conceptual framework for EIA using simultaneous models and policy analysis. Socio-economic methods or EIA with respect to current socio-economic environment and methods for deriving impacts.

EVM510: Environmental Engineering Services

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. advance knowledge in engineering services; and
2. know applicable installations in electricity, water supply and telephone services.

Course Contents

The course will enable students to advance knowledge in engineering services and applicable installations, i.e., electricity, water supply, telephone services and many more.

EVM511: Environmental Monitoring and Audit

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. know the general principles of environmental monitoring;
2. acquire the skills of organizing auditing and monitoring programme;
3. know the mechanism of pollutant interaction with soil and vegetation; and
4. know the general principles of bio-testing, aquatic toxicity, types, bio, assays, data analysis and interpretation.

Course Contents

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

EVM515: Environmental Biotechnology

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. know the historical development of biotechnology;
2. know how to use the tools and practice of genetic engineering; and
3. learn the applications of bio-technology in environmental remediation.

Course Contents

Definition and historical development of biotechnology, genes and genetic engineering tools and practice of genetic engineering, applications of bio-technology (bio-remediation, bio-control, bio fertilizers, bio-gas, bio-informatics.) socio-economic implications of bio-technology.

Minimum Academic Standards

Equipment

1. Soil, Plant and Water Laboratory

U-V Spectrophotometer, Microscope, Petri dishes, forceps, Oven, Fridge, Burners, PPE's, Reagents, pH Meter, Thermometer, Analytical balance, Desiccator, Distiller, Sterilizer, Water test kits, Sterilizers and Mini water treatment plant, Electrical Conductivity Meter, Atomic Absorption Spectrophotometer, Colorimeter, AAS, Flame Photometer, GC, hydrometer, thermometer, plungers, measuring cylinder, reagents, Soil Colour Chart, Mechanical shakers, sieve, centrifuge,

rack, water bath, cryotubes, Digestion block, Kjeldahl distillation set, Sieve shaker, Turbidity meter, D.O meter, Pycnometer.

2. Remote Sensing and Geographical Information System Laboratory

Global Positioning System, Computers, Unmanned Aerial Vehicle and GIS Application, GIS and Modelling Soft wares, AutoCAD, Binoculars, Satellite Imageries, Measuring Equipment, Densitometer, Abney Level, Ranging poles and pegs, Colour Printers, Cameras

3. Microbial Laboratory

Microscope, Petri dishes, forceps, Oven, Fridge, Burners, PPE's, Reagents, Glassware (test tubes, beakers, conical flasks, dishes, stirrers, pestle and mortar, pipettes, burettes) Autoclave, Colony counters, Wire loops, Glass slides, Centrifuge, Cover slips

4. In-situ Field Survey and Measurements (Dry Laboratory)

Global Positioning System, Gas Sensors, Gas Sensors, Cameras, Binoculars, Measuring Equipment, Noise Level metres, Gas Chromatograph, handheld physicochemical analysers, soil auger, Mussel Colour charts, Particulate Matter metres, Temperature metres, Relative humidity meters, Health index metres.

Staffing

Personnel

The personnel requirements for the programme should reflect students' population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Library

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories, Clinics, Workshops and Offices

	Space	Use	Minimum (m²)
33.	Professors Office	Academic	24
34.	Head of Department	Administration	24
35.	Senior Lecturer	Academic	20
36.	Lecturer	Academic	16
37.	Assistant Lecturer	Academic	12
38.	Senior Technical Staff	Technical	12
39.	Senior Administrative Staff	Administration	12
40.	Junior Technical Staff	Technical	10
41.	Junior Administrative Staff	Administration	10
42.	Studio Space	Students	30
43.	Lecture Space	Students	75
44.	Seminar Space	Students	30
45.	Laboratory Space	Students	30
46.	Library	Students	35
47.	Social Space	Students	40
48.	Storage Space	Students	30

B. Sc / B. Tech ENVIRONMENTAL STANDARDS

Overview

The Environmental Standards Programme specifically provides professional training on the regulation and formation of standards to ensure that the activities of private and public organizations operate within legally and socially acceptable parameters for effective control of various forms and dimensions of environmental pollution. The programme is interdisciplinary in nature, drawing upon the diversity of environmentally related departments and disciplines such as geosciences, social sciences, ecology, environmental chemistry and atmospheric sciences. It provides students with quality education and training to explore a wide variety of environmental issues, including the social and human environment such as urban and regional planning, ethical and value systems, environmental law and policy, indigenous and religious beliefs, history and impact of past environmental decisions, environmental impact analysis; the physical environment, including the hydrologic cycle, waste management, coastal processes, energy production technologies, soil preservation, geography, air/water pollution; and the biological environment, including the function of ecosystems, population dynamics, and toxicology. Graduation from the program offers job opportunities as Lecturer, Sustainability Consultant, Environmental resource manager, Waste management officer, Nature conservation officer, Commercial horticulturist amongst others.

Philosophy

The programme is designed to provide students with the scholarly background and intellectual skills necessary to understand complex environmental problems in order to formulate good policies and take informed decisions on issues relating to environmental protection and management.

Objectives

The objectives of the degree programme in Environmental Standards are to:

1. produce competent, intellectually mature, ethical, socially responsible environmental resource managers with comprehensive knowledge of management systems, legal framework and social/cultural issues pertaining to utilization of natural resources;
2. provide basic knowledge and skills for the understanding geophysical and biological processes and constraints, environmental challenges and economic opportunities, ethical and value systems, environmental law and policy and impact analysis;
3. equip students with requisite skills for successful application of theoretical constructs and concepts of resource and environmental standards to solve societal environmental needs;
4. equip students with skills for the application of monitoring and environmental standards tools used by resource and environmental practitioners;
5. develop in students, leadership, interpersonal relations and entrepreneurial competencies to adequately prepare them to collaborate with similar institutions in promoting environmental management practices in the society; and
6. equip students with skills for active participation at workshops, seminars, consultancy and advisory services in environmental toxicology, recycling and waste management procedures.

Unique features of the program

1. production of graduates with high cognitive abilities and skills to solve environmental challenges;
2. production of graduates with scientific information and literacy skills in environmental toxicology and soil quality standards;
3. development of skills in students for environmental impact assessment and auditing;
4. provision of training in formation of environmental standards and policies for private and public organizations;
5. development of expertise in recycling and waste management for environmental sustainability; and
6. provision of training in applicability of Information Technological skills for environmental management and sustainability.

Employability skills

1. Stakeholder analysis and management of environmental resources.
2. Consultancy services in environmental impact analysis.
3. Consultancy services in geographic information systems
4. Recycling and waste management skills for environmental management.
5. Nature conservation practices for rural communities
6. Research skills in gathering and handling environmental data
7. Information technology skills for analyzing environmental data
8. Skills in environmental toxicology and soil standards
9. Skills in environmental auditing

21st Century skills

1. Critical Thinking, Problem Solving, Reasoning, Analysis, Interpretation, Synthesizing Information.
2. Research Skills and Practices, Interrogative Questioning.
3. Creativity, Artistry, Curiosity, Imagination, Innovation, Personal Expression.
4. Perseverance, Self-Direction, Planning, Self-Discipline, Adaptability, Initiative.
5. Information and Communication Technology (ICT) Literacy, Media and Internet Literacy, Data Interpretation and Analysis, Computer Programming.
6. Global Awareness, Multicultural Literacy, Humanitarianism.
7. Scientific Literacy and Reasoning the Scientific Method.
8. Environmental and Conservation Literacy, Ecosystems Understanding.
9. Health and Wellness Literacy, Including Nutrition, Diet, Exercise, Public Health and Safety.

Admission and Graduation requirements

Admission Requirements

Admission into Environmental Standards Programmes may be through any of the following modes:

Four (4) / Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which

must include English Language, Mathematics, Physics, Chemistry and one other subjects from the following list will be eligible for admission currently through the Unified Tertiary Matriculation Examinations (UTME); Biology, Geography, Economics, Government and Agricultural Science.

Direct Entry Admission: A candidate who fulfils normal admission requirements above and in addition holds an HSC, GCE Advanced Level, IJMB, JUPEB NCE and or a National Diploma (ND) with lower credit in Environmental Standards or related disciplines may be admitted into the 200 level of the programme.

Graduation Requirements

The minimum number of credit units for the award of B. Sc.in Environmental Standards is 120 units for UTME and 90 Units for Direct entry students. A student shall therefore qualify for the award of a degree when he has met the conditions. The minimum credit load per semester is 15 credit units.

For the purpose of calculating a student's Cumulative Grade Point Average (CGPA) in order to determine the class of degree to be awarded, grades obtained in all the courses whether compulsory or optional and whether passed or failed must be included in the computation. Even when a student repeats the same course once or more before passing it or substitutes another course for a failed optional course, grades scored at each and all attempts shall be included in the computation of the GPA.

Duration

A student will not be allowed to exceed an additional 50 per cent of the duration of the program if he fails to graduate within the minimum number of years.

1. UTME

Four (4) academic sessions or eight (8) semesters);

2. Direct Entry

Three academic sessions or six (6) semesters;

3. In general, no student will be allowed to exceed an additional 50% of the normal duration of the program.

Global Course Structure

100 Level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian people and culture	2	C	30	-
MTH 101	General mathematics I	3	C	45	-
MTH 102	General s Mathematics II	2	C	30	-
AMS 103	Introduction to Computer	2	C	30	-
AMS 104	Principles of Project Management	2	C	30	-

AMS 101	Principles of Management	2	C	30	
CHM 101	General Chemistry I	3	C	30	45
ENS 102	History of Environmental Standards	2	C	30	-
ENS 104	Introduction to Environmental Sciences	2	C	30	-
	TOTAL	22	C	360	180

200 Level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, logic and human existence	2	C	30	-
ENT 211	Entrepreneurship and innovation	2	C	30	45
ENS 201	Natural Ecosystems	2	C	30	-
ENS 202	Introduction to Valuation	2	C	30	
ENS 203	Economics of Environmental Standards	2	C	30	-
ENS 204	Environmental Ethics	2	C	30	-
ENS 205	Environmental Pollution and Degradation	2	C	30	-
ENS 206	Natural resources conservation and Environmental management	2	C	30	-
ENS 207	Wild Life Conservation and Land use	2	C	30	-
ENS 208	Population and Environmental change	2	C	30	-
	TOTAL	20	C	420	90

300 Level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	45
ENS 301	Waste Management	2	C	30	-
ENS 302	SIWES	15	C	-	675
ENS 303	Environmental Law	2	C	30	-
ENS 307	Environmental Protection	2	C	30	-
ENS 309	Guideline establishment and Environmental Standards	2	C	30	-
ENS 311	Exposure Assessment	2	C	30	

GEO 317	Geographic Information System and Remote Sensing	2	C	30	45
	TOTAL	31		240	765

400 Level

Course Code	Course Title	Units	Status	LH	PH
ENS 401	Research Method I	2	C	30	-
ENS 402	Research Method II	2	C	30	
ENS 404	Research Project	6	C	90	135
ENS 405	Environmental Standards	2	C	15	45
ENS 406	Standards for Air and Water Quality	2	C	30	
ENS 407	Field Work	2	C	30	45
ENS 408	Environmental Standards Seminar	3	C	45	
ENS 411	Environmental Impact Assessment	2	C	30	
ENS 413	Standard for Soil Quality	2	C	30	-
	TOTAL	23	C	435	270

Course Contents with Learning Outcomes

100 Level

GST 111: Communication in English (2 Units C: LH15; PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). English Sentences (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument

and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing , writing, post writing, editing and proofreading; Brainstorming, outlining, paragraphing, types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing and Note making. Mechanics of writing). Comprehension Strategies: (Reading and types of reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 units; C: LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. analyse the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. Solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

COS 101: Introduction to Computing Sciences (3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic components of computers and other computing devices;
2. describe the various applications of computers;
3. explain information processing and its roles in the society;
4. describe the Internet, its various applications and its impact;
5. explain the different areas of the computing discipline and its specializations; and
6. demonstrate practical skills on using computers and the internet.

Course Contents

Brief history of computing. Description of the basic components of a computer/computing device. Input/ Output devices and peripherals. Hardware, software and human ware. Diverse and growing computer/digital applications. Information processing and its roles in society. The

Internet, its applications and its impact on the world today. The different areas/programs of the computing discipline. The job specializations for computing professionals. The future of computing.

Lab Work: Practical demonstration of the basic parts of a computer. Illustration of different operating systems of different computing devices including desktops, laptops, tablets, smart boards and smart phones. Demonstration of commonly used applications such as word processors, spreadsheets, presentation software and graphics. Illustration of input and output devices including printers, scanners, projectors and smartboards. Practical demonstration of the Internet and its various applications. Illustration of browsers and search engines. How to access online resources.

PHY 101: General Physics I (Mechanics)

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum;
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time; units and dimension, vectors and scalars, differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton laws of motion (Inertial frames, Impulse, force and action at a distance, momentum conservation); Relative motion; Application of Newtonian mechanics; Equations of motion; Conservation principles in physics, conservative forces, conservation of linear momentum, Kinetic energy and work, Potential energy, System of particles, Centre of mass; Rotational motion; Torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; Circular motion; Moments of inertia, gyroscopes and precession; Gravitation: Newton's Law of Gravitation, Kepler's Laws of Planetary Motion, Gravitational Potential Energy, Escape velocity, satellites motion and orbits.

PHY 102: General Physics II

(2 Units C: LH 30)

Learning Outcomes

On completion of this course, students should be able to:

1. explain the concepts of heat and temperature and relate the temperature scales;
2. derive, and apply the fundamental thermodynamic relations to thermal systems;
3. describe and explain the first and second laws of thermodynamics, and the concept of entropy;

4. state the assumptions of the kinetic theory and apply techniques of describing macroscopic behaviour;
5. deduce the formalism of thermodynamics and apply it to simple systems in thermal equilibrium; and
6. describe and determine the effect of forces and deformation of materials and surfaces.

Course Contents

Heat, temperature and temperature scales. Gas laws; general gas equation, thermal conductivity. First Law of thermodynamics, heat, work and internal energy. Reversibility, second law of thermodynamics, heat engines and entropy. Zero's law of thermodynamics, kinetic theory of gases, molecular collisions and mean free path. Elasticity, Hooke's law, Young's, shear and bulk moduli. Hydrostatics, pressure, buoyancy, Archimedes' principles. Bernoulli's equation and incompressible fluid flow. Surface tension, adhesion, cohesion, viscosity, capillarity, drops and bubbles.

CHM 101: General Chemistry I (3 Units C: LH 45)

Learning Outcomes

At the end of this Course, the Students should be able to:

1. define atom, molecules and chemical reactions;
2. discuss the Modern electronic theory of atoms;
3. write electronic configurations of elements on the periodic table;
4. rationalize the trends of atomic radii, ionization energies, electronegativity of the elements based on their position in the periodic table;
5. identify and balance oxidation – reduction equation and solve redox titration problems;
6. draw shapes of simple molecules and hybridized orbitals;
7. identify the characteristics of acids, bases and salts, and solve problems based on their quantitative relationship;
8. apply the principles of equilibrium to aqueous systems using LeChatelier's principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures;
9. analyse and perform calculations with the thermodynamic functions, enthalpy, entropy and free energy; and
10. determine rates of reactions and its dependence on concentration, time and temperature.

Course Contents

Atoms, molecules, elements and compounds and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization and shapes of simple molecules. Valence Forces; Structure of solids. Chemical equations and stoichiometry; Chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.

AMS 101: Principles of Management. (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic concepts related to management;
2. explain the roles, skills and functions of management;

3. analyze organizational problems and how managerial decisions are arrived at; and
4. demonstrate the complexities associated with management of human resources in the organizations and how to apply the knowledge in handling these complexities.

Course Contents

Basic concepts in management. Management principles. Functions of the manager. Planning: Nature and purpose of planning. The organizing function: Department, line and staff Authority. Staffing and directing: Selection of employees and managers. Appraisal of managers. Management development. Nature of directing. Motivation. Leadership. Controlling: The control process, control technique, recent developments in the control function. The Nigerian environment: Management problems in Nigeria, challenges of indigenization, transferability of management system.

AMS 104 Principles of Project Management (2 Units C: LH:30)

Learning Outcomes

At the end of this course students will be able to:

1. articulate the series of steps/processes & strategies to achieve end results;
2. determine, procure, optimize resources (human, material, & financial) needed;
3. apply the project management processes to initiate, plan, execute, monitor and control projects; and
4. have a working knowledge of key project management methods.

Course Contents

Build your understanding of the key foundation elements; activity areas and processes of project delivery within any project management environment. The generic tools and techniques used in project delivery, the different project management methodologies from traditional methods like waterfall to more conventional delivery methods such as agile.

ENS 102: History of Environmental Standards (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. distinguish between egocentrism and anthropocentrism;
2. discuss how these two competing ideologies influenced the development of environmental standards;
3. state the Key issues in the Rio declaration.;
4. discuss the impact of human – caused environmental damage in the society; and
5. explain how two worldviews has led to problems and delay in establishing standards.

Course Contents

History and development of environmental standards as influenced by two competing ideologies of egocentrism and anthropocentrism. Case studies of dumping of cocoa toxic waste. Rio declaration. The meanings and differences between the two worldviews. How this has led to problems and delay in establishing standards, environmentalism and the increased understanding of science and medicine, as well as advances in the measurement of factors contributing to environmental damage. How this improved measurement has allowed scientists to further understand the impact of human – caused environmental damage and destruction on human

health and the biodiversity which compose the natural environment and how these developments in science and medicine have been fundamental for the setting of environmental standards.

ENS 104: Introduction to Environmental Sciences

(2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concepts of ecosystems and biogeochemical cycles;
2. narrate the functions of the earth's major systems;
3. give examples of human activity on the earth systems;
4. explain how these systems are affected by human activity; and
5. state the essential differences between biosphere, hydrosphere and lithosphere.

Course Contents

Energy system in the atmosphere, biosphere, hydrosphere and lithosphere. Current environmental issues including air pollution, water pollution, drought, desertification, deforestation, earthquakes, hurricanes, floods and other environmental hazards.

ENS 106: Global Warming and Climate Change

(2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concept of global warming;
2. explain Causes and effects of global warming;
3. suggest possible societal responses to global warming;
4. explain the relationship between global warming and climate change;
5. explain the concepts of Climate variability and external forcing mechanisms; and
6. discuss solutions to negative impacts of climate change

Course Contents

Meaning of Global Warming: the long – term rise in the average temperature of the earth's climate system as a major aspect of current climate change. Causes and effects of global warming. Possible societal responses to global warming. Regional trends. Greenhouse gasses. Relationship between global warming and climate change. Climate change: definition and meaning: climate change occurs when changes in the patterns that remains in place for an extended period of time. Causes and effects/impacts of climate. Earth's energy budget and climate system. Climate variability. External forcing mechanisms: Greenhouse gasses; orbital variations; solar output; volcanism; plate tectonics; and cosmic rays.

200 Level

GST 212. Philosophy, Logic and Human Existence

(2 Units C: LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic, the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211 – Entrepreneurship and Innovation

(2 Units C: LH15; PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction).

Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

ENS 201: Natural Ecosystems

(2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concept of environment;
2. explain the interactions among the components;
3. mention types of ecosystems;
4. state the factors affecting flora and fauna distribution at various scales;
5. discuss the impact of time, adaptation, succession and climax on vegetation changes; and
6. mention principal plants in West Africa and their ecology.

Course Contents

Components of environment and the interaction among components, types of ecosystems (ecosystems as habitat); Principal plants in West Africa, their ecology as related to grazing; Factors affecting flora and fauna distribution at various scales. Vegetation changes through time, adaptation, succession and climax.

ENS 202: Introduction to Valuation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course students will be able to:

1. define the concepts of valuation and market value;
2. identify when market value should be used for a valuation;
3. outline the steps in valuations and the structure of a valuation report;
4. apply the comparison method of valuation with a practical example;
5. describe the other four methods of valuation; and
6. state when and why each method should be used by a valuer.

Course Contents

The nature and definition of value; Definition and purpose of valuation; the function of value economic, constitutional, geographical, environmental, political and legal basis of property value. The effect of the international situation. The capital market and the principles governing interest rates and yield market analysis. Structure and environmental surveys and reports for valuation; the mathematical background and construction of valuation table.

ENS 203: Economics of Environmental Standards**(3 Units C: LH45)****Learning Outcomes**

At the end of this course students will be able to:

1. define basic concepts in Environmental Economics;
2. explain the location theory and its applicability in environmental economics;
3. discuss the economic basis for urbanization;
4. explain the relationship between land use and land value;
5. state the interaction between land use and value on the workings of the price mechanism; and
6. apply economic analyses to practical situations involving land regulation.

Course Contents

Land as a scarce and exhaustible resources. Location theory, economic basis of urbanization, conflicting and competing demands for land use and conservation. Relationship between land use and land value. Effect of land use and land value on the operation of price mechanism. The process of land development economics of real estate, nature and function of the urban property, urban area, financial development and economic concepts.

ENS 204: Environmental Ethics**(3 Units C: LH 45)****Learning Outcomes**

At the end of this course students will be able to:

1. distinguish between the concepts of Environmental ethics and environmental philosophy;
2. narrate the historical development of environmental philosophy from the twentieth to the twenty first century;
3. describe the role of environmental philosophy in evaluating attitudes toward the environment;
4. discuss the compatibility of human and environmental/ecological values;
5. identify the importance of environmental philosophy within the management and design of social systems;
6. mention and explain the branches of environmental ethics; and
7. explain the relevance of environmental ethics and values within the field of environmental science.

Course Contents

The concept of Environmental ethics and philosophy. Role of ethics in the environment. Importance of environmental ethics. Branches of environmental ethics:

- a) environmental law;
- b) environmental sociology;
- c) Eco theology;
- d) ecological economics;
- e) ecology; and
- f) environmental geography.

Historical development of environmental philosophy in the twentieth and twenty first century; role of environmental philosophy in evaluating attitudes toward the environment; compatibility of human and environmental/ecological values; Importance of environmental philosophy within the management and design of social systems; Relevance of environmental ethics and values within the field of environmental science.

ENS 205: Environmental Pollution and Degradation

(2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. Explain the meaning of environmental problems with examples;
2. discuss the ethical, cross-cultural, and historical context of environmental issues and links to human and natural systems;
3. state the types and causes of environmental degradation and pollutants in the society
4. discuss the impact of wastes on human health with suitable examples;
5. mention the barriers to solving environmental problems in the country and the way forward; and
6. explain the concepts and implications of Ozone layer depletion and the greenhouse effect.

Course Contents

Environmental Problems - Meaning and definition of environmental problem. Recognition of environmental problem. Nature, magnitude and severity of environmental problem. Causes and sources of environmental problems. Barriers to solving environmental problems. Dealing with/solving environmental: preventive measures; remedial measures. Comprehensive studies of the types, causes and consequences of environmental degradation. Highlights of environmental degradation factors (such as uncontrolled deforestation, urbanization, industrialization, wars, erosion, flood, desertification, salinity and bush fires) Protective measures to sustainably conserve and manage the environment. Sources of pollution. Major pollutants of air, soil and water; noise pollution, management of pollutants; Ozone layer depletion and the greenhouse effect.

ENS 206: Natural Resources Conservation and Environmental Management **(2 Units C: LH 30)**

Learning Outcomes

At the end of this course students will be able to:

1. explain the concepts of natural resources, scarcity and resource use;
2. discuss Environmental/ecological implications of threatened/endangered natural resources;
3. mention major resource and environmental challenges in the society;
4. explain the meaning of sustainable use and conservation of natural resources; and
5. discuss strategies for sustainable use and conservation of natural resources.

Course Contents

Natural resource conservation and management concepts; Natural resources: distribution of the world's natural resources and exploitation; Importance of Natural Resources Conservation and Environmental Management. The concepts of resource use and scarcity Environmental/ecological implications of threatened/endangered natural resources (i.e. forests and wildlife species); sustainable use and conservation of natural resources. Types and Possible solutions to resource and environmental challenges. Tools for creating a sustainable future for the human population challenges.

ENS 207: Wildlife Conservation and Land Use**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course students will be able to:

1. explain the meaning of Wildlife Conservation and Land Use;
2. apply techniques from forest economics, forest operations, forest products, and forest policy to develop and evaluate land management choices;
3. employ appropriate models and effective techniques to produce and analyze forest recreation management plans;
4. mention and proffer solutions to problems related to wildlife conservation and management; and
5. critically evaluate forest wildlife and conservation policies in the country.

Course Contents

Nigerian forest wildlife and conservation policies; traditional land use practices, changes-in land-use practices, population growth and land use practices. Management planning of forest reserves, gene banks (Gene plasm), game reserves and national parks. Wildlife management needs. Problems related to wildlife conservation and management; Models and techniques for the production and analysis of forest recreation management plans. Evaluation of Wildlife Conservation and Land Use practices in the country.

ENS 208: Population and Environmental Change**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course students will be able to:

1. explain the concepts of Population and Environmental Change;
2. describe the components of the environment and their interactions with one another;
3. explain the concepts of population trends and distribution patterns with examples;
4. explain the links between environmental impact of human behaviour and earth sustenance; and
5. mention factors that affect the ability of the earth to sustain human populations.

Course Contents

The concepts of Population and Environmental Change. Components of the environment, the interaction among components, types of ecosystem, ecosystem and habitats; population and environmental change. Population growth, distribution patterns, population trend and environment. Earth sustenance: Factors affecting the ability of the earth to sustain human population, Links between environmental impact of behaviour of the population and earth sustenance, earth's area of bio-productive land as a finite resource and processes for its increase or destruction.

STA 203: Statistics for Physical Sciences and Engineering (3 Units C: LH 45)**Learning Outcomes**

At the end of this course students will be able to:

1. explain the measures of Central Tendency;
2. state the differences between Means, Median, and Mode;

3. explain the basic tenets of the Bayes Theorem and its uses;
4. distinguish between Discrete and Continuous Random Variables;
5. illustrate the differences between grouped and ungrouped dispersions in a graph; and
6. draw the tree diagram and explain its uses in statistics.

Course Contents

Measures of Central Tendency and Dispersion (Grouped and Ungrouped): Mean-Arithmetic, Geometric, Median, Mode, Qualities, Deciles and Percentiles. Empirical Relation between Means, Median, and Mode, their Relationship and absolute Dispersion. Simple Space and Events as Sets. Finite Probability Space; Properties of Probability Statistical Independence and Conditional Probability. Tree Diagram. Bayes Theorem. Discrete and Continuous Random Variables Expectation. Independent Bernoulli Trails. Binomial Distribution and Normal Distributions. Normal Approximation to Binomial and Poisson Distributions. Hyper Geometric.

GEO 201: Introduction to Geomorphology and Soil Geography (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the meaning and scope of Geomorphology;
2. explain the meaning and scope of soil geography;
3. mention different types of rocks;
4. discuss the distinguishing characteristics between types of rocks;
5. explain the factors involved in soil formation; and
6. state the differences between types of soils.

Course Contents

The meaning and scope of Geomorphology. Rock types, their origins and characteristics. Nature and origin of Second Order Relief Forms of the continents. Structural landforms. The meaning and scope of soil geography. Factors of soil formation. Zonal soils; azonal soils and intrazonal soils.

GEO 205: Land Surveying

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course students will be able to:

1. distinguish between graphical and spatial concepts;
2. reduce horizontal data to the mapping plane and height data to sea level;
3. collect spatial data with expertise;
4. calculate and, present collected results in a suitable format;
5. solve various plane surveying problems with rigorous calculation; and
6. produce technical reports in a team and comment on accuracies achieved.

Course Contents

Introduction to the theory of land surveying, Elementary land surveying methods, Chain and tape, prismatic compass, plane table surveying, levelling and production of site plans. Evaluation of technical reports. Identification and solutions to various plane surveying problems

Law 208: Land Law**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course students will be able to:

1. distinguish between proprietary and personal interests and its relevance to land law;
2. distinguish between freehold and leasehold estates, legal and equitable interests in land;
3. explain Trusts of Land with particular reference to co-ownership of the family home including the holding and management of co-owned land,
4. explain legal and equitable formalities for the creation and disposition of estates and interests in land;
5. explain the concept of priority of interests in registered land; and
6. discuss Commercial interests including mortgages, easements and covenants.

Course Contents

Introduction to basic concepts: Trusts of Land, freehold and leasehold estates, legal and equitable interests. priority of interests in land, mortgages, easements and covenants. Sources of Nigerian land law, classification and types of property, ownership and possession, real property, customary land law; Nature of title to land under customary law. Nature and management of community land. Industrial rights in community land. Creation and determination of family property under customary law.

SOC 212: Social Change**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course students will be able to:

1. explain the concept of social change with examples;
2. describe forms of diversity and divisions within society;
3. mention and Explain Theories of social change;
4. discuss the applicability of the Theories of social change in modern societies and in specific research contexts; and
5. explain the benefits and problems associated with Social Change.

Course Contents

The concept of social change. Benefits and challenges of social change. Analysis of the nature and mechanisms of the transformation that African societies have undergone (and are undergoing) since the colonial encounter with the Western world. The colonial situation and African responses; the emergence of new economic, social, political institutions, status structures and ideological orientations, as well as the crisis of development in the post-colonial era will be explored. Theories of social change (functionalist; conflict,) and its applicability to modern societies.

300 Level

GST 312- Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

6. analyse the concepts of peace, conflict and security;
7. list major forms, types and root causes of conflict and violence;
8. differentiate between conflict and terrorism;
9. enumerate security and peace building strategies; and
10. describe roles of international organisations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes, Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders.). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH5; PH45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;

7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoT)*, *Blockchain*, *Cloud Computing*; *Renewable Energy*. Digital Business and E-Commerce Strategies).

ENS 301: Waste Management (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. Define and list types of wastes;
2. List the main options available for solid waste disposal and describe their advantages and disadvantages;
3. Describe how toxic and other hazardous waste can be disposed of safely, including their regulations;
4. Explain Classification of wastes;
5. Explain potentials of wastes as a natural resource;
6. Identify management techniques and methods used to introduce schemes for minimization, reuse, recycle, recovery and disposal;
7. Discuss waste management hierarchy; and
8. Explain thermal processing of waste.

Course Contents

Meaning and definition of wastes. Characteristics of wastes. Classification of wastes. Criteria/modes of classification: (i) state of the matter (ii) degradable or non-degradable. Types of wastes. Sources of wastes, Methods of waste disposal; waste management strategies, minimisation, recycling/reuse and composting. Potentials of wastes in the agricultural, economic and energy sectors of the society. Hazardous Waste: Definition as a waste with substantial or potential threats to public health or the environment. Characteristics of hazardous wastes:

ignitability, reactivity, corrosivity, and toxicity. Hazardous waste disposal/management, classification of hazardous waste. Importance of regulations for hazardous waste regulations. Regulatory measures and organizations for management of hazardous waste. Evaluation of regulatory practices and organizations for hazardous waste management in Nigeria.

ENS 302: SIWES (6 Units C: PH 675)

Learning Outcomes

At the end of the field work. students will be able to demonstrate knowledge acquired during SIWES in proffering solutions to environmental-related problems.

Course Contents

Students are to spend twelve weeks in their places of attachment. Depending on the nature of their places of attachment, they are to participate in activities like map making, planning practices, land, soil and water resources evaluation; human and socio-economic surveys, basic operation of field and laboratory equipment and facilities, practical and operational climatology, instrumentation in geography; and any other assignment given to them by their industrial based Head of Department and Report on the entire exercise/ experience.

ENS 303: Environmental Law (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the meaning of environmental standard criteria and regulations;
2. mention examples of environmental laws by the federal government;
3. mention examples of States edict and regulations on the environment;
4. discuss some International Laws, treaties and conventions;
5. explain enforcement mechanisms for environmental laws in the country;
6. mention examples of violations and sanctions for environmental laws in the country; and
7. compare environmental laws and enforcement mechanisms in developing and
8. developed countries.

Course Contents

Basic concept of environmental standard criteria and regulation. Federal environmental laws organisation of environment protection. States edict and regulation on the environment, plant and animal quarantine. Regulations and enforcement mechanisms, violations and sanctions, levels of effectiveness and challenges in enforcement. Comparative study of environmental laws in some advanced countries. Such as USA, Canada, Thailand, and the sorts; International Laws, treaties and conventions.

ENS 307: Environmental Protection (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able:

1. Define the concept of environmental protection;
2. State the purpose and importance of environmental protection;

3. Mention causes, prevention and control techniques for soil erosion;
4. Mention regulatory bodies and policies in environmental protection in Nigeria;
5. Explain reclamation techniques for degraded mine sites; and
6. Explain the relationship between environmental management and protection.

Course Contents

Introduction to basic concepts: Environment, Environmental protection, Shelter belt, Reclamation, Rehabilitation, Wetland, Soil erosion, sand dune, Reclamation, afforestation and reforestation. Purpose and importance of environmental protection. Soil erosion: causes, prevention and control techniques (tree planning, use of sustainable farming systems). Reclamation techniques for degraded mine sites, sand dune management (sand dune fixation with indigenous and exotic plant species), zone afforestation and reforestation programmes. Reclamation/Rehabilitation of wetland, shelter belt establishment and management, micro and macro climatic applications, The law and Environmental protection. Regulatory bodies and policies in environmental protection. Evaluation of effective protection practices in the country. The interface between environmental management and environmental protection.

ENS 309: Guideline Establishment and Environmental Standards (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. define the concepts of environmental guidelines and standards;
2. discuss the processes of setting environmental standards;
3. mention the main targets of environmental standards;
4. explain the components of environmental standards;
5. explain the relationship between the law and environmental standards; and
6. give examples of organizations involved in setting environmental standards.

Course Contents

The concepts of guidelines and environmental standards. Relationship between guidelines and standards. The guideline value as the maximum permissible concentration that guarantees an acceptable health condition or environmental quality. Types of guidelines. Actors and organizations for the establishment of guidelines: International panels of experts, Governmental organizations, World Health Organization (WHO) and other international organizations. Components of Environmental Standards: (a) application in near – ground level outdoor locations where a person might reasonably be expected to be exposed over the relevant average period; (b) protection of human health and the environment; (c) contribution to sustainable development. Main targets of environmental standards.: avoiding adverse health effects from high pollution levels, protecting the environment and contributing to sustainable development. The law and environmental standards: regulatory bodies, documents, consequences/penalties. Review of descriptive and basic inferential techniques in handling environmental data for policy making.

ENS 311: Exposure Assessment (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concept of Exposure Assessment;

2. distinguish between biological and exposure monitoring;
3. state the purposes of designing a sound exposure assessment;
4. outline and explain the major steps in exposure assessment strategy; and
5. mention types of health hazard and administrative controls.

Course Contents

Introduction to the concept of Exposure Assessment. Purpose of designing a sound exposure assessment: (a) to assess potential health risks; differentiate between acceptable and unacceptable exposures; control unacceptable exposures; (b) determine needs and priority for health controls; (c) ensure and demonstrate compliance with governmental and other exposure guidelines; (d) establish and document historical record of exposure levels, communicate exposure monitoring results. Major steps in exposure assessment strategy. establish exposure assessment strategy; basic characterization; occupational exposure; exposure assessment; information gathering: exposure monitoring, exposure modelling, biological monitoring, epidemiological data generation; health hazard controls: engineer controls, administration control, and personal protection equipment. reassessment; communication and documentation.

GEO 317: Geographic Information System and Remote Sensing II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course students will be able to:

1. explain Database Management Systems and its classifications;
2. describe the nature, components and applications of GIS;
3. develop skills in sourcing, manipulating and interpreting spatial data;
4. critically discuss the applications of GIS in a variety of fields;
5. discuss the underlying theory of spatial information science;
6. perform spatial analysis tasks;
7. generate outputs using GIS software; and
8. explain techniques required for Database recovery and Security.

Course Contents

Introduction to Spatial Database Management Systems. Introduction (Data, Information, File system vs DBMS, Data models, Hardware and software requirements, Database Management Systems, Database languages, Database Architecture, users and administrators, Classification of Database Management Systems. Relational Data Model (Relational model, Data Structure, Constraints, Key, Codd's Rule, Relational Algebra, Fundamental operations, Additional operations, Extended operations Null values. SQL (SQL, Data Definition, Basic structure of SQL queries, set operations, Aggregate, Functions, Null values, Nested sub queries, Complex queries, Views, Embedded SQL, Dynamic SQL, Triggers. Database Design and Management (Design process, Entity Relationship Model, Constraints, EER, Diagrams, Atomic domain and First Normal Form, Functional Dependency, Decomposition using Functional dependencies, Normalization using Multi-Valued Dependencies and Join Dependencies, Basic concepts of file organizations, indexing and hashing, Database recovery techniques, Database Security, Handling Spatial Database. Accessing Data Using ADO.Net And Vb.Net (ADO.Net Object Model using OLE DB managed provider, Other data providers, Accessing XML data, Building Windows). GIS and the information age, Capabilities of GIS, Spatial data and their sources for GIS analysis, Raster and Vector data, Data Entry, GIS analysis and modelling data issues and problems.

400 LEVEL

ENS 401: Research Method I (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. differentiate between research and research methodology;
2. distinguish between scientific and non-scientific research;
3. explain types of data, sources and handling techniques;
4. explain the research process;
5. demonstrate the structure of sections of the students' research report; and
6. analyze the problems and prospects of research in Nigeria.

Course Contents

Conceptual definitions of research and research methodology. Types of research: Scientific and non-scientific. Types of scientific research methodology such as experimental, survey, case study and historical. The concept and importance of research in Environmental standards. methodology of Environmental Standards research. Qualitative and quantitative researches. The research process, types and sources of data and handling techniques. Layout of the research report: guidelines for the Cover page and preliminary pages, background of the study, research problem selection, meaning and formulation of research questions, research objectives and hypothesis, scope/delimitation of the study, significance of the study, literature review. Meta analysis in literature selection. Conceptual literature/framework. Theoretical literature. Empirical literature. Gap and value addition. Research methodology (Theoretical framework, area of the study, population, sample and sampling techniques. Instrument for data collection and description. Validation and reliability of instruments. Instrument administration. The research model. Analytical tools/ scaling and measurement techniques and procedure. Sources of data. Handling primary and secondary data in research. Problem of missing data. Data interpolations and extrapolations. Presentation, interpretation and discussion of findings. Summary. Conclusion. Recommendation. Policy implications. Contribution to knowledge. Limitation of the study. Suggestion for further research. References. Appendices. Prospects and problems of environmental research in Nigeria.

ENS 402: Research Method II (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. distinguish between quantitative and qualitative research designs;
2. describe a range of quantitative and qualitative research designs used in Environmental research and identify the advantages and disadvantages associated with these designs;
3. outline factors guiding the selection of quantitative or qualitative method for data collection and analysis;
4. explain objectives of doing research, research process, research designs and sampling;
5. outline qualitative research techniques for data collection;
6. describe measurement, analytical and scaling techniques quantitative research; and

7. discuss tools for data analysis-and hypothesis testing procedures.

Course Contents

Qualitative and quantitative research methods. Methods of data collection. Interview; types, objectives, recording. Questionnaires: types, development. Design of experiments (laboratory procedures). Factors guiding the selection of quantitative or qualitative method for data collection and analysis. Description of materials and methods in experimental research. Hypothesis; formulation of hypothesis; testing of hypothesis; concept of significance. Formulation of models. Methods of data analysis; types, choice and description. Interpretation of results. Computer based analysis. Theoretical, Methodological and Analytical frameworks in research. Referencing styles: MLA, Classic style and APA. Referencing software, Communication skills and oral presentation (defence) of research projects, preparation, skills and use of power points for presentation. Longitudinal framework for presentations.

ENS 403: Risk Assessment and Management (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. distinguish between Risk Evaluation and Characterization;
2. explain the concept and steps of risk evaluation;
3. narrate the requirements for effective risk characterization;
4. discuss techniques of risk reduction and management of environmental risk; and
5. perform elementary Risk Sensitivity Analysis.

Course Contents

Meaning and definition of Risk Evaluation. Risk Characterization: the qualitative and/or quantitative estimation, attendant uncertainties, probability of occurrence and severity of known or potential adverse health effects on a population based on hazard identification, hazard characterization and exposure assessment. Requirements for risk characterization such as mathematical knowledge (as in modelling data), knowledge of the process under consideration, and microbiological knowledge and expertise is invariably needed. Stages of risk characterization: (i) combining previous MRA steps; (ii) summarizing the risk; (iii) variability in risk; (iv) validation against experience. Determination of risk management priorities through establishment of qualitative and /or quantitative relationships between benefits and associative risks. Risk evaluation process: identification, probability and impact, moment of risk, treatment, secondary risk, residual risk, and monitoring and review. Techniques of reduction and management of environmental risks: substitution, information about the safe use and disposal of agents to the public and users, and limiting the availability of the agent. Elementary Risk Sensitivity analysis

ENS 404: Research Project (6 Units C: PH 270)

The student is expected to undertake research work on any chosen topic as a special area of study as it pertains to the environment and environmental management. Students are required to demonstrate ability for independent research, which makes contribution to knowledge with some guidance of an academic staff throughout the project. The examination will be conducted with a viva, which will be attended by the external examiner.

ENS 405: Environmental Standards (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concept and importance of environmental standards;
2. outline steps in setting environmental standards;
3. mention types of damage;
4. explain steps in the balancing process; and
5. evaluate environmental standards in Nigeria.

Course Contents

The concept and importance of environmental standards. Steps in setting environmental standards: evaluation of the specific risk, calculation of the expected value of the occurrence of the risk, classification of possible types of damage (i) changes due to physiochemical damages, (ii) ecological damages in plants and animals, and (iii) damages to human health, establishment of an acceptable risk, in view of the expected collective benefit and the balancing process. Steps in the balancing process: (i) to establish objectives that serves the protection of life, health and environment, and allows a rational allocation of social resources, (ii) studying the possible outcomes of implementing these objectives, and (iii) considering social costs or damages, which will arise when any of the available options are not further pursued. Evaluation of environmental standards in Nigeria.

ENS 406: Standards for Air and Water Quality

(2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concepts of air quality standards, air quality parameters;
2. mention primary sources of information on air quality standards;
3. discuss the criteria and policies for setting air quality standards;
4. explain how to predict air impacts;
5. explain the major categories of water use and causes of water quality/pollution; and
6. discuss the most common standards parameters used in assessing water quality.

Course Contents

The concept of air quality standards as levels of air pollutions prescribed by regulations that may not be exceeded during a specified time in a defined area. Air quality parameters: Air quality index (AQI) used by government agencies: Uses and types. The primary sources of information on air quality standards, criteria and policies: the relevant local, state and central organization that have a mandate for overseeing the air resources of the study area.: Air environmental setting; Air impacts; prediction of air impacts, impact assessment; and impact mitigation. Water quality as the chemical, physical, biological and radiological characteristics of water. The most common standards used to assess water quality: health of ecosystems, safety of human contact and drinking water. Setting standards: Role of agencies that make political and technical/scientific decisions about how the water will be used. Categories: the parameters for water quality and how they are determined by the intended user. Human consumption, industrial and domestic use of water, environmental water quality, and agricultural water quality.

ENS 407: Field Work (3 Units C: LH 30; PH 45)

Students will be exposed to first hand practical experience and application of classroom-based learning on a variety of concerns in environmental standards. At the end of the field work students will be able to demonstrate knowledge acquired from the Field Work in proffering solutions to environmental-related problems.

ENS 408: Environmental Standards Seminar (3 Units C: LH 45)

Students are expected to choose topics on issue relating to the environment. Students will be required to present a seminar on the chosen topic.

ENS 409: Sustainable Development (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. Explain the concepts of sustainable development;
2. Discuss the tools for combating human population challenges for sustainable development;
3. Discuss sustainable development goals (SDGs) and its sub divisions;
4. Explain the concept of resettlement planning; and
5. Explain environmental/ ecological implications of threatened/ endangered natural resources.

Course Contents

Natural Resources Conservation and Environmental Standards -Natural resources, concepts and definitions; Natural resources exploitation; Environmental/ecological implications of threatened/endangered natural resources (i.e., forests and wildlife species); sustainable use and conservation of natural resources. Sustainable Development: the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and system services upon which the economy and society depend. history of sustainability and sustainable development, definitions and scope of sustainable development, sustainable development goals (SDG): Concept, UN decade for sustainable development, sub – groups: environmental (or ecological), Agriculture, Economics, Environmental Economics, Energy, Manufacturing, Technology, Transport, Business, Income, Politics, Architecture and Culture. Resettlement Planning. tools for combating human population challenges for sustainable development

ENS 410: Monitoring, Inspection and Enforcement (2 Units C: LH 30)

Learning Outcomes

At the end of this course students will be able to:

1. describe the concepts of monitoring, inspection;
2. explain methods of enforcement in environmental standards;
3. explain the various methods for verifying compliance with standards;
4. discuss the need and tools for effective inspection; and
5. explain the penalties for defaulters.

Course Contents

Introduction to the concepts of **Monitoring, Inspection and Enforcement.**

Monitoring: the monitoring of activities or agents that have to meet environmental standards: Provisions for the verification of compliance with standards; The need to determine accurately and rapidly extent of compliance by agents, the need for a coordinated monitoring process to reduce the overall costs of regulation and improve outcomes.

Inspection: Importance, methods, processes. The place of inspection in achieving the purpose of environmental standards, and how to undertake effective inspection.

Enforcement: strength and credibility behind the policy for greater effectiveness. Strength derives from both the likelihood of inspection and the level of fines. Emphasis in this component should be on: (i) the need for enforcement in environmental standards, and (ii) how best to undertake enforcement, usually "appropriate penalties" arising from inspection in the field.

ENS 411: Environmental Impact Assessment

(3 Units C: LH 15; PH 90)

Learning Outcomes

At the end of this course students will be able to:

1. explain the concept of environmental impact assessment;
2. explain the Environmental impact of human actions;
3. outline the components and steps of environmental impact assessment;
4. conduct Environmental impact analysis;
5. state methods for identifying, predicting and interpreting impacts/effects and inspection procedures; and
6. explain the Conceptual framework for EIA using simultaneous models and policy analysis.

Course Contents

The concept of environmental impact assessment. Environmental impact of human actions. Response of society to environmental changes. Bio-geophysical and socio-economic impacts. Administrative procedures in planning/decision making of environmental impact assessment (EIA). Contents of EIA (Definition, Steps in EIA, Screening and Scope, Impact Mitigation Techniques and Mitigation Hierarchy Alternatives, Report Writing Format and Follow-Up Programmes). Methods for identifying, predicting and interpreting impacts/effects and inspection procedures. Conceptual framework for EIA using simultaneous models and policy analysis. Socio-economic methods or EIA with respect to current socio-economic environment and methods for deriving impacts.

ENS 412: Environmental Audit**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of this course students will be able to:

1. explain the concept of environmental audit;
2. discuss the system of auditing standards and existing environmental auditing;
3. explain the processes associated with environmental auditing, and environmental management systems;
4. explain the current legislative requirements of environmental auditing;
5. identify the potential impacts of proposed developments and propose solutions to address these impacts in a range of contexts;
6. develop appropriate documentation for an environmental audit statement; and
7. develop an appropriate response to an environmental audit.

Course Contents

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

ENS 413: Standard for Soil Quality**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course students will be able to:

1. explain the basic concepts of soil quality and soil quality index;
2. determine parameters for soil quality;
3. differentiate between soil quality and soil health;
4. outline the Procedures for setting standards for soil quality;
5. state the importance of setting soil quality standards; and
6. evaluate policies and its effectiveness on soil quality standards in Nigeria.

Course Contents

Meaning and definition of soil quality. Concepts of soil quality and their significance. Development of framework for evaluation of soil quality. Soil quality index; Characteristics of the quality and types of soil. Differences between soil quality and soil health. Importance of setting soil quality standards. Procedures for setting standards for soil quality. Agencies for setting soil quality standards. Evaluation of policies and its effectiveness on soil quality standards in Nigeria.

Minimum Academic Standards

Personnel

The personnel requirements for the programme should reflect student population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15 for the Discipline.

Academic Staff

The point of entry for each of the recognised teaching staff positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated in Table 4:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments and faculty offices. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Physical Facilities

Spaces

For the good administration of the programme, adequate facilities should be provided for the office of the Head of Department. The required minimum office space standards for the programmes are provided by the Commission in the relevant section of the BMAS. Spaces should be provided for the under listed facilities taking due cognizance of the minimum recommendation as presented in Table 5:

1. Office Accommodation;
2. Classroom Space;
3. Studio Space;
4. Seminar Rooms;
5. Drawing Offices;
6. Workshop Spaces; and
7. Library.

Space Recommendations

	Space	Use	Minimum (m ²)
2.	Professors Office	Academic	25
3.	Head of Department	Administration	30
4.	Senior Lecturer	Academic	12
5.	Other ranks of academic staff	Academic	10
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	9
9.	Junior Administrative Staff	Administration	9
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

Staff- Student Common Room

In order to promote both social and academic interaction among staff and between staff and students, there should be a common room of about 35(m²) equipped with a kitchenette where staff and students could interact in an informal atmosphere.

Equipment

Each Faculty/programme should be provided with requisite laboratories, studios and workshops with relevant equipment in relation to student population and variety of activities performed in each programme. To achieve the benchmark standards for any programme, there should be:

1. Well-equipped Computer lab with adequate desk top computers for students, including relevant computer software in each degree programme;
2. High speed Internet facilities for both staff and students;
3. A PC for each academic staff in his / her office with Internet facilities;
4. Multimedia Recording Devices (at least 4);
5. A Video recorder;
6. A video player;
7. A wide screen Television;
8. Overhead power-point, multi-media facilities;
9. Vehicle for field trips; and
10. Laboratories with diverse equipment to be provided with consumables in terms of chemicals, biological or ecological materials. to support the prescribed practicals.

Library and information Resources

Universities should leverage on available technology to put in place rich databases and other electronic/digital library and information resources. In addition, good stock of current hard copies of reference and other textual materials should be provided centrally at the level of the Faculty. A well networked digital library should serve the entire university community. Availability of wireless facilities (Wi-Fi) with adequate bandwidth should enhance access to these electronic resources.

B. Sc / B. Tech. Estate management

Overview

Estate Management is the art and science of supervising the use, development and management of landed property, other natural resources, the built environment, and the valuation of all interests subsisting therein. The course is designed to produce graduates who can appreciate the complexity of legal, economic, technological, social and environmental factors, on the use, development and management of landed property assets. The course provides students a unique opportunity to develop an understanding of the breadth and depth of property investment markets. This knowledge is tailored to align with emerging global trends, technological advancement and environmental concerns, which calls for responsive programmes for future training in Estate Management and valuation. The degree envisaged may be a B.Sc. for regular universities or a B. Tech. from Technological universities.

Philosophy

The bachelor's degree in Estate Management prepares students for responsible career positions in both public and private sectors that address the demands of complex legal, socio-economic and socio-political issues associated with land value, property investments, land use, land administration and land management. This calls for graduates with considerable understanding and in-depth knowledge of the theoretical base surround these concepts and broad-based knowledge of the techniques and practices of property valuation, building construction, land surveying, urban and regional planning, land law, land economics, land use and property development and Project management skills

Objectives

Specific objectives are to:

1. inculcate in students an appreciation of the complex nature of the relationships between man, his natural and built environment;
2. involve the students in an intellectually stimulating and satisfying experience of learning and studying at the tertiary level;
3. provide students with a broad and balanced foundation of the knowledge institutional framework surrounding land use;
4. develop in students the ability to apply analytical skills in developing solutions to theoretical and practical property and land investment problems;
5. instil in students entrepreneurial and managerial skills required for self-employment in the profession;
6. impart lifelong skills to students, with which to function in a fast changing economic, technological and political world;
7. create enabling environments that will foster active interest in research and development in Estate Management and related fields;
8. create an appreciation and awareness in students the importance of estate surveying and valuation in an industrial, environmental, economic, social and cultural context; and
9. foster in students the use of information technology in the effective management of land and property.

Employability Skills

The employment and entrepreneurial prospects of graduates in estate management are excellent. This course has been designed such that at the end, students would have developed

interpersonal and employability skills in several areas to enable them to navigate the labour market with ease. The skills are as follows:

1. Oral presentation and excellent Communication skills.
2. Teamwork, team building skills and Agile Project Management skills.
3. Reliability and trustworthiness with integrity.
4. Critical analysis and Problem-solving skills.
5. Organizational, planning and managerial skills.
6. Initiative, self-management, leadership and administrative skills.
7. Life-long Learning.
8. Negotiation and conflict resolution skills.
9. Technology, numeracy and data management skills.

21st century skills

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Unique features of the programme

1. Students will be exposed to a wide range of elective modules.
2. Students will have the opportunity to apply their knowledge to real-life projects and case studies.
3. Students will be exposed to team-working skills.

Admission and Graduation requirements

Admission requirements

Admission into the Estate Management programme may be through any of the following modes:

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates seeking UTME admission into the five-year B.Sc. or B.Tech. degree programme in Estate Management must have obtained five Senior School Certificate (SSC) credit passes which must include Mathematics, English Language and Economics.

In addition to the three mandatory subjects mentioned above, two other subjects are required which are to be drawn from Geography, Chemistry, Physics, Biology, Government, Commerce, Agricultural Science and Technical Drawing.

Direct entry admission:

Candidates seeking direct entry admission into the degree programme shall:

Fulfil all the UTME admission requirements besides JAMB.

Have obtained G.C.E. Advanced level, H.S.C/IJMB or equivalent passes in at least two relevant subjects drawn from the UTME subject grouping, including Economics or Geography.

ND and HND applicants from Estate Management and other relevant disciplines such as Surveying, Cartography, Town Planning, Architecture and Environmental Management may be considered for direct entry admission into 200 and 300 Levels, respectively, provided they satisfy the minimum requirements for admission via UTME as stated above.

Graduation requirement

A student is expected to have passed a minimum of 150 credit units, completed one semester SIWES attachment, and successfully completed a terminal project in order to qualify for graduation. The 150 credit units should include all compulsory courses. The expected duration of the bachelor's degree in Estate Management is:

A minimum of ten (10) and maximum of fifteen (15) Semesters for UTME admission Students.

A minimum of eight (8) and maximum of twelve Semesters is required for 200 level direct entry students.

A minimum of six (6) and maximum of nine (9) Semesters for 300 level direct entry students.

Global course structure

100 level

Course code	Course title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	
MTH 101	Elementary Mathematics I (Algebra and Trigonometry)	3	C	45	
MTH 102	Elementary Mathematics II (Calculus)	3	C	45	
URP 104	Introduction to Environmental Sciences	2	C	30	
ECO 111	Principles of Economics I	2	C	30	
ARC 122	Architectural Graphics and Lettering	2	C	30	
COS 103	Introduction to Computer	2	C	30	
AMS 101	Principles of Management	2	C	30	
ESM 111	Introduction to Estate Management	2	C	30	
ESM 112	Introduction to Property Management	2	C	30	
	Total	24			

200 level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	
ENT 211	Entrepreneurship and Innovation	2	C	15	45
URP 204	Introduction to Land Use Planning	2	C	15	45
BUD 222	Building Construction and Materials	2	C	30	
LAW 211	Law of Contract and Tort I	2	C	30	
LAW 212	Law of Contract and Tort II	2	C	30	
SVY261	Basic Surveying, I	2	C	30	
SVY 262	Basic Surveying II	2	C	30	
ESM 221	Introduction to Valuation I	2	C	30	-
ESM 241	Principles of Land Economics	2	C	30	
ESM 222	Introduction to Valuation II	3	C	45	-
ESM 242	Land Economics II	2	C	30	
	Total	25			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	30	
PPL 358	Property Law - Landlord and Tenant	2	C	30	
ESM 321	Principles of Valuation I	3	C	30	
ESM 331	Property Management and Real Estate Marketing	2	C	30	
ESM 322	Principles of Valuation II	3	C	45	
ESM 315	Arbitration and Awards I	2	C	30	
ESM 357	National and Rating Taxation I	2	C	30	
	Total	18			

400 level

Course Code	Course Title	Unit(s)	Status	LH	PH
ESM 406	Urban Land Economics	2	C	30	
ESM 461	Computer Appreciation and Applications in Real Estate	2	C	30	
ESM 421	Applied Valuation	3	C	45	
ESM 441	Building Services and Maintenance	2	C	30	
ESM 409	SIWES	15	C	675	
	Total	24			

500 level

Course Code	Course Title	Units	Status	LH	PH
ESM 501	Advanced Valuation I	3	C	30	45
ESM 502	Advanced Valuation II	3	C	30	45
ESM 504	Feasibility and Viability Appraisal I	2	C	30	
ESM 506	Applied Property Management	2	C	30	
ESM 508	Professional Practice and Ethics and office Administration	2	C	30	
ESM 510	Land use and Resource Management I	2	C	30	
ESM 512	Project Dissertation	3	C	30	45
ESM 583	Research Methods	2	C	30	
	Total	19			

Course Contents and Learning Outcomes

100 level Estate Management

GST 111: Communication in English (2 Units C: LH15)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical thinking and Reasoning methods (Logic and syllogism, Inductive and deductive argument and reasoning Methods, Analogy, Generalisation and explanations). Ethical considerations, Copyright rules and infringements. Writing activities: (Pre-writing, Writing, Post-writing, Editing and Proof-reading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making. Mechanics of writing). Comprehension strategies: (Reading and types of reading, Comprehension skills, 3RSQ). Information and Communication Technology (ICT) in modern language learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain and analyze the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. List and identify the major linguistic groups in Nigeria;
3. State in sequential order the gradual evolution of Nigeria as a political unit;
4. define and analyze the concepts of trade, economic and self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. explain and the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and proffer possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation

of Nigeria in 1914; formation of political parties in Nigeria. Nationalist movements and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politic; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation. Re-orientation strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

GST 121: Use of Library, Study Skills and ICT (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to: Confidently utilize traditional libraries

1. Gain familiarity with e-libraries;
2. Understand basics of desk research; and
3. Successfully browse the web and access electronic databases.

Course Contents

Brief history of libraries; library and education; university libraries and other types of libraries; study skills (reference services). Types of library materials, using library resources including e-learning, e-materials. Understanding library catalogues (card, OPAC) and classification. Copyright and its implications; database resources; bibliographical citations and referencing. Development of modern ICT; hardware technology; software technology; input devices; storage devices; output devices; communication and internet services; and word processing skills.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex

numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus)

(2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. Solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

URP 104 Introduction to Environmental Sciences

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should:

1. Understand the complex nature of the environment;
2. Have full knowledge of environmental media;
3. Understand recent global debates on the environment; and
4. Fully appreciate the interrelationship between the environment and population.

Course Contents

The concepts of the environment: ecology, human, physical, social and technological environment. Components of the physical environment: biosphere, atmosphere, lithosphere and hydrosphere; The cultural and technological environment; Impact of urbanization on the natural environment; significance of urbanization. Factors of environmental degradation and their impacts on natural and man-made environment: deforestation. The role of vegetation cover on the environment; consequences of deforestation on climate change. Soil degradation and desertification; consequences of desertification. Socio-ecological problems versus industrial development: problems of industrialization and deterioration of human environment. Population explosion; fossil fuel exploration. Introduction to air, land and water pollution. Introduction to municipal solid waste management.

ECO 111: Economic Principles**(2 Units C: LH 30)****Learning Outcomes:**

On completion of this course, students should be able to

1. Understand the fundamental concepts and principles of demand and supply;
2. Understand consumer behaviour;
3. Apply this understanding to urban land economics and the behaviour of the property market; and
4. Apply this understanding to the relationship between land economics and property value trends in later years of study.

Course Contents

An introduction to various issues, the nature of economic science, the methodology of economics, major areas of specialization in economics, elementary principles of micro- and macro-economics, current issues of interest and probable future developments. Micro-economic theory, problem of scarce resources and allocation of resources. Supply and demand theory, Consumer behaviour. Production theory. Cost curves. Pricing and output under perfect competition, imperfect competition, monopoly and monopolistic competition. Relationship between micro- and macro-economics. Aggregation of individual's demands analysis of consumer behaviour utility theory and individual's demand for a good a geometric treatment aggregate supply – a summation of firm supply curves individual firm's equilibrium – theory of cost and production. A geometric treatment of pricing under different market systems.

ARC 122: Architectural Graphics and Lettering**(2 Units C: LH 30)****Learning Outcomes:**

At the end of this course, students should be able to:

1. demonstrate familiarity with producing sketches;
2. explain architectural design processes;
3. define, recognize and interpret architectural symbols; and
4. explain and interpret architectural drawings.

Course Contents

Introduction to graphics description and use of drawing equipment, basic drafting techniques, line drawing, scale and proportions, lettering convention, representation on drawing basic descriptive geometry, surface development, inclined cuts and true sections. Effect of light on shape and form, shadow projection rendering techniques. Simple projections, various types of tracing and drawing papers. Standard sizes, right and wrong tiles. Design process with example of a small house project, importance of various spaces, linking of various spaces. Development of elevations. Difference between presentation drawings and working drawings. Introduction to Draughtsman ship. Site: relation of site with design solution, site selection factors for various types of topographic construction of different scales and their uses in practice.

COS 103: Introduction to Computer**(2 Units C: LH 30)****Learning Outcomes**

At the end of this course, students should be able to:

1. define and explain basic computer concepts, fundamental functions and operations of the computer;
2. identify the basic elements required in a computer system;

3. explain an operating system software in any Operating System environment;
4. produce electronic documents using basic software applications such as Microsoft Office applications;
5. design basic algorithms for computer programs using basic programming languages;
6. demonstrate the use of Web browsers, search engines and e-mail; and
7. demonstrate the use of Internet for learning

Course Contents

History and development of computer technology. The why and how of computers. Computer types: analogue, digital, and hybrid. Central preparation equipment: keypunch, sorter and the likes. Data transmission, nature, speed and error detection. data capture and validation, including error detection. Systems analysis and design. Modern data storage and retrieval system. Introduction to programming languages. Introduction to basic system and application software.

AMS 101: Principles of Management (2 Units C: LH 30)

Learning Outcomes

On completion of this course, students should be able to:

1. demonstrate understanding of basic concepts related to management knowledge. Understand the roles, skills and functions of management;
2. define organizational problems and how managerial decisions are arrived at; and
3. explain the complexities associated with management of human resources in the organizations and how to apply the knowledge in handling these complexities.

Course Contents

Basic concepts in management: management principles, functions of the manager. Planning: nature and purpose of the organizing function, department, line and staff. Authority, staffing and directing: selection of employees and managers, appraisal of managers, management development, nature of directing, motivation and leadership. Controlling: the control process, control technique, recent developments in the control function. The Nigerian environment: management problems in Nigeria, challenges of indigenization and transferability of management system.

ESM 111: Introduction to Estate Management I (2 Units C: LH30)

Learning Outcomes:

On completion of this course, students should be able to:

1. understand the role and functions of the Estate Surveying and Valuation professional in the public, corporate and the organized private sector;
2. understand the basic industrial processes where the Estate Surveyors and Valuers' skills may be required;
3. develop mastery of the fundamental principles of Estate Management;
4. develop clear understanding of the history of the Estate Surveying and Valuation profession in Nigeria; and
5. recognize the career opportunities in Estate Management that are available upon graduation.

Course Contents

The estate management profession in Nigeria. Doctrines of tenure and of estate as known in English law; types of estate and interest in land. Types of land use. Overview of the scope/broad vista of estate management discipline. Definition and philosophy of estate management. Estate management and general/business management compared and contrasted. Basic appreciation of the concepts of property management, valuation, land taxation, real estate brokerage, and many others. The inter- and multi-disciplinary nature of estate management and hence its associated wide range of courses of instruction. This course is an introduction to management principles and theories, especially as it relates to properties.

ESM 112: Introduction to Property Management I (2 Units C: LH 30) **Learning Outcomes:**

At the end of this course, students should:

1. Understand the concept of property management;
2. Understand management theories and principles in property management practice;
3. Understand the key activities that make up the property management process; and
4. Appreciate the overall setting for property management practice.

Course Contents

Property management defined; types of property involved - commercial, residential, industrial, office property; professional organizations; duties and job descriptions of property managers; Introduction to the principles and theories of management and leadership. Meaning of management in the context of estate management. Types of estate: rural and urban, public and private, and their categories and characteristics. The estate settings: social, political, economic, legal and physical. Types of tenancies: monthly, yearly and weekly.

200 Level Estate Management **GST 212. Philosophy, logic and human existence (2 Units C: LH 30)** **Learning Outcomes**

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments,

logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character molding.

ENT 211 – Entrepreneurship and Innovation (2 Units C: LH 15; PH 45)
Learning Outcomes

At the end of this course, students should be able to:

1. define and explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence
4. explain and engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

URP 204: Introduction to Land Use Planning (2 Units C: LH 15; PH 45)
Learning Outcomes

At the end of this course, students should be able to:

1. understand the basic concepts of land and land use;
2. appreciate the relationship between planning and valuation; and
3. become familiar with planning tools.

Course Contents

Definitions and concepts of land and land use; the need for planning land use. Attributes of land use planning, methods of land use planning, principles of land use; land use determinants, land use dynamics and integrated spatial solutions for problems on different scales. Area-oriented integration of various tools for land use planning, regional and environmental management. Agricultural/rural land use planning: models of land use planning, and concept of entrepreneurship (entrepreneurship, intrapreneurship/Corporate entrepreneurship,). theories, rationale and relevance of entrepreneurship (Schumpeterian and other perspectives. Risk-taking, necessity and opportunity-based entrepreneurship and creative destruction). Characteristics of entrepreneurs (opportunity seeker, risk taker, natural and nurtured, problem solver and change agent, innovator and creative thinker). Entrepreneurial thinking (critical thinking, reflective thinking, and creative thinking). Innovation (concept of innovation, dimensions of innovation, Change and innovation, knowledge and innovation). Enterprise formation, partnership and networking (basics of business plan, forms of business ownership, business registration and forming alliances and joint ventures). Contemporary entrepreneurship issues (knowledge, skills and technology, intellectual property, virtual office, networking). Entrepreneurship in Nigeria

biography of inspirational entrepreneurs, youth and women entrepreneurship, entrepreneurship support institutions, youth enterprise networks and environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

BUD 222: Building Construction and Materials II

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Gain insights into the construction industry and its relation to the national economy;
2. Understand Building forms, architectural and engineering drawings; required for the construction of buildings;
3. Become familiar with building services and be able to identify contemporary building materials; and
4. Experience the Building process and the use of various materials and methods.

Course Contents

Introduction to building construction: site selection, site investigations and preparation. Site layouts, setting out, excavation, sub-soil investigations. Element and components of building foundations, floors and walls. Introduction to building materials, properties, characteristics, and application of the following materials: stone, cement, sand, block - bricks, timber, metal, concrete. Study of elements and components of building doors, windows, staircases, ceilings and roofs with special reference to tropical humid and dry environments. Factor governing building costs: study of timber, homogeny steel, stones, asbestos and other building materials and their indoors, windows, staircases, ceiling and roof elements of building.

LAW 211: Law of Contract and Tort I

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Understand the place of law in Estate Management practice;
2. Become familiar with the fundamentals of contracts; and
3. Have basic knowledge of the law of Tort.

Course Contents

Nature of contract: Sources of law, concept of bargain, classification. Formation of contract: offer and acceptance, consideration, intention to create legal relations. Contents of contract: terms, representations exclusion and limiting terms and fundamental breach of terms. Capacity: infants, illiterates, corporations, mental patients and drunken persons. Vitiating elements of a contract: mistake, misrepresentation; duress; illegality and unenforceable contracts. Privity of contract: rules and exceptions. Discharge of contract: by performance, agreement, breach and frustration. Remedies/damages; equitable remedies in outline only, quantum merit claims in quasi contract.

LAW 212: Law of Contract and Tort II (2 Units C: LH30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define and explain their knowledge of the place of law in Estate Management practice;
2. draft simple contract documents; and
3. state and demonstrate mastery in the property and tenancy law.

Course Contents

Tort of negligence and nuisance liabilities, interference with contractual relations, the doctrine of vicarious liability. Miscellaneous torts – maintenance and carpentry remedies. Vitiating elements in contract – incapacity mistake, misrepresentation, duress and undue influence. Privity of contract and its exceptions discharge of contracts, remedies for breach of contract, remedies in quasi contract, limitation of actions in contracts.

SVY 261: Basic Surveying I (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Appreciate the place of land surveying in Estate Management;
2. Understand the practical use of modern surveying instruments such as hand-held GPS devices; and
3. Become familiar with the fundamental principles and applications of Geographic Land Information Systems.

Course Contents

General introduction to various aspects of surveying, use of simple survey equipment; principles and practice of chain surveying, compass traversing. Introduction to survey draughtsmanship.

SVY 262: Basic Surveying II (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define the fundamental principles and applications of Geographic Land Information Systems; and
2. undertake specific field-based tasks

Course Contents

General introduction to the various facts of land surveying, determination of vertical distance errors, and corrections in levelling cross-sections and profiles: contouring, enlargement and reduction of maps, years. Introduction to Geographic land information systems, use of basic GPS devices.

ESM 221 Introduction to Valuation I**(3 Units C: LH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. obtain sound knowledge of the foundational principles of investment mathematics which is fundamental to understanding of Valuation;
2. appreciate the fact that Valuation is the primary subject of study in the Estate Surveying and Valuation Profession;
3. gain understanding of the mathematical processes used in property investment analysis and decision-making;
4. develop basic understanding of the fundamentals of valuation;
5. improve understanding of Valuation mathematics; and
6. be conversant with the principles of value.

Course Contents

Introduction to investment mathematics. Simple interest calculations, compound interest calculations. Basic valuation mathematics, amount of one-naira calculations, present value of one-naira calculations, interrelationship between the amount of one naira and the present value formula, different ways of expressing the main components in the formula such as interest (i), number of (n) and the capital invested. Nature/theories and definitions of value, definitions and purposes of valuation. The functions of a valuer. Income, prices, cost and their relation to value. The economic constitutional, geographical, sociological, environmental, political and legal bases of property value. Principal types of landed property in Nigeria.

ESM 241: Land Economics I**(2 Units C: LH 30)****Learning Outcomes:**

At the end of this course, students should be able to:

1. Understand the institutional and socioeconomic frameworks that regulate and control the use and development of land;
2. Understand how land is an economic resource; and
3. Become familiar with the use of the economic principles to develop and manage land use.

Course Contents

Meaning of land. Concept of rent. Land market, price determination, and location theory. Land resources requirements. Comparative and complementary land uses. Demand for land (local and global) and its relation to population and resources. Theories of consumption. Theories of income. Theories of land asset prices. Nature of land investment; decisions and appraisal. Divergence of private and social costs. Problems of resource allocation; conservation of land resources Concept of land use capacity. Concepts of highest and best use. Principle of comparative and absolute advantages; application in allocation of resources. Organization and its effects on values. Reasons for urbanization. Economic advantages and disadvantages of urbanization. Land use values and patterns; value determination. General patterns of land use within urban areas.

ESM 222 Introduction to Valuation II**(3 Units C: LH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. Gain understanding of rental analysis;
2. Become familiar with the valuation of different property types;
3. Understand the basics of property inspections; and
4. Undertake simple valuation exercises.

Course Contents

The land market: its nature, features, sectors and imperfections. The money and capital markets, and the principles governing interest rates and yields. Method of market analysis. Mathematics of finance: the mathematical background and construction of valuation tables and concepts of years purchase. Property inspection and survey (property referencing). Concepts of rack rents and profit rent. Elementary valuation problems without and with the aid of valuation tables – for income receivable in arrears and in advance, different income periods/patterns: discounting and capitalization distinguished; the concept of risk and return.

ESM 242: Land Economics II**(2 Units C: LH 30)****Learning Outcomes:**

At the end of this course, students should:

1. Know the institutional and socioeconomic frameworks that regulate and control the use and development of land;
2. Understand Land as an economic resource;
3. Become familiar with use of the economic principles to develop and manage land use; and
4. Manage any type of 'land' within an existing framework, towards achieving any organizational goals either in the private or public sectors.

Course Contents

Man's dependence on land. Man/land relationships within physical, economic and institutional frameworks. Importance and nature of decision-making. Descriptive models of decision-making units ('proprietary' and 'social'). Proprietary decisions: goals and motive; criteria for evaluation constraints; households and firms location decision. Development decision-making processes: landowners, developers, and planners. Finance for development; financial institutions. Cost/benefit analysis as an aid to land use decision-making. Relation between proprietary land units: superior, inferior relationships, neighbours, successors. Conflicts between proprietary and social interests; pollution – types of problems and approaches to control. Outline of selected aspects of land policies in Nigeria and elsewhere. Variety of policy frameworks within which land use decision are taken. Land policy and land reform. Land use planning machinery. Rural and agricultural policy. Analysis of land use decisions and problems of land use planning in Nigeria.

300 Level Estate Management

GST 312- Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building.

Course Contents

Concepts of peace, conflict and security in a multi-ethnic nation. Types and Theories of Conflicts: ethnic, religious, economic, geo-political conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of conflict and violence in Africa: indigene and settlers' phenomenon; boundaries/boarder disputes; political disputes; ethnic disputes and rivalries; economic inequalities and social disputes. Nationalist movements and agitations. Selected conflict case studies: Tiv-Junkun; Zangon-Kataf chieftaincy and land disputes. Peace building, management of conflicts and security: peace & human development. Approaches to peace & conflict management: religious, government and community leaders. Elements of peace studies and conflict resolution: conflict dynamics assessment scales: constructive & destructive. Justice and legal framework: concepts of social justice. The Nigeria legal system. Insurgency and terrorism. Peace mediation and peace keeping. Peace & security council: international, national and local levels. Agents of conflict resolution: conventions, treaties community policing: evolution and imperatives. Alternative Dispute Resolution (ADR): a) dialogue b) arbitration, c) negotiation d) collaboration. Roles of international organizations in conflict resolution: (a) the United Nations and its conflict resolution organs, (b) the African Union, & its peace and security council (c) ECOWAS in peace keeping. Media and traditional institutions in peace building. Managing post-conflict situations/crisis: refugees. Internally displaced persons (IDPs). The role of NGOs in post-conflict situations/crises.

ENT 312 – Venture Creation

(2 Units C: LH15; PH45)

Learning Outcomes

1. At the end of this course should be able to:
2. describe the key steps in venture creation;
3. list the opportunities in high potential sectors regardless of geographical location;
4. state how original products, ideas, and concepts are developed;
5. explore a business concept for further incubation or pitching for funding;
6. identify key sources of entrepreneurial finance;
7. implement the requirements for establishing and managing micro and small enterprises;
8. conduct entrepreneurial marketing and e-commerce;
9. apply a wide variety of emerging technological solutions to entrepreneurship; and
10. explain why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity identification (sources of business opportunities in Nigeria, environmental scanning. Demand and supply gap/unmet needs/market gaps/market research. Unutilized resources, social and climate conditions and technology adoption gap). New business development (business planning, market research). Entrepreneurial finance (venture capital, equity finance, micro finance, personal savings, small business investment organizations and business plan competition). Entrepreneurial marketing and e-commerce (principles of marketing, customer acquisition & retention, B2B, C2C and B2C models of e-commerce, first mover advantage, e-commerce business models and successful e-commerce companies,). small business management/family business: leadership & management, basic book keeping. Nature of family business and family business growth model. Negotiation and business communication (strategy and tactics of negotiation/bargaining. Traditional and modern business communication methods). Opportunity discovery demonstrations (business idea generation presentations, business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (the concept of market/customer solution, customer solution and emerging technologies, business applications of new technologies - Artificial Intelligence (AI), Virtual/mixed Reality (VR), Internet of Things (IoTs), block-chain, cloud computing and renewable energy. Digital business and e-commerce strategies).

PPL 358: Property Law I (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define the fundamentals of property Law;
2. explain the concepts of property ownership and land titling terminology in Nigeria;
3. describe land use patterns and community land rights patterns; and
4. state the different law types in practice in Nigeria.

Course Contents

Introduction: (a) legal notions of property (b) historical evolution of land law in Nigeria (c) sources of Nigerian land law (d) working terminologies – ownership, possession, titles, rights, liability and land. Customary land law/Islamic land law: (a) modes of acquiring title to land, settlement; expansion; loan or borrowing; pledge or pawn; gift; conquest, allotment, kola tenancy (b) concept and ownership of land: (i) nature of title to land (ii) control and management of community land – individual rights and extent of community land today (iii) creation of family land – nature and extent of member’s right in family land; control of family land, alienation of family land, recovery of family land. Improvement by a member of family land, termination of family land (iv) an outline of succession to rights in land. Legal regulation of property: (a) the Land Use Act – state control of land; grant of right of occupancy; what Certificate of Occupancy connotes; alienation of Certificate of Occupancy; revocation of Certificate of Occupancy; compensation for revocation (b) relationship between Land Use Act and State land law (c) an outline of control of natural resources – minerals, water and forests; agrarian reforms (d) rights and interest in land – freehold, joint tenancy, tenancy in common, prescription, laches, acquiescence, leasehold, easements, profit a Pender, covenants, mortgages, (e) registration – registration of instruments, registration of title.

ESM 321: Principles of Valuation I**(3 Units C: LH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. define and state the basic understanding of the fundamental principles of property valuation to real life valuation;
2. explain the distinguishing characteristics of different forms of investment and yield patterns; and
3. demonstrate competence in the determination of the income and outgoings in the valuation of property investments.

Course Contents

Factors affecting supply and demand for land and buildings. Principles of investment. Stocks and shares. Interest rates and investment yields, the property market methods of valuation. Factors affecting demand and supply of land and buildings of various uses. Outgoings and the different letting arrangements: FRI, IRI. of leases and tenancies. Income patterns and variations. Property valuation process/procedure generally, and of the different methods of valuation: Direct market price comparison, replacement cost. Profit/accounts, and land residual methods. Sources of data for valuation.

ESM 331: Property Management and real Estate Marketing**(2 Units C: LH30)****Learning Outcomes:**

At the end of this course, students should be able to:

1. define and explain the basic principles of property management;
2. state the difference in the nature and relationship of landlord and tenant, and how they are formed and sustained;
3. explain the fundamentals of estate marketing practice; and
4. demonstrate competence in estate marketing practice through field assignments.

Course Contents

Management theory and principles in relation to landed property. Management evolution, principles of management, forecasting, planning, organization, co-ordination, control, motivation, communication. Advanced concepts of land and interests in land (estate). Motives of property ownership, land tenure system in Nigeria, management of private and public estates, estate records. Landlord and tenant relationships, tenancy agreements and obligation of parties. Management of multi-tenanted property. Computerized property management systems - rent reminders, account updates. Agency and marketing of real estate. Duty and responsibilities of estate agents; collaboration and multiple agency methods and challenges.

ESM 322: Principles of Valuation II**(3 Units C: LH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. advise on the value of landed properties;
2. undertake valuation for sale or exchange;

3. gain understanding of different types of interests in property; and
4. apply the knowledge in undertaking property valuation.

Course Contents

Analysis of sales and letting of freehold and leasehold property, use of valuation tables. Effect of income tax on sinking fund, premiums, surrender and renewals of leases. Investment/ income method of valuation approaches: term and reversion, hard-core; traditional/conventional (initial/all-risks yield cum fixed annuity capitalization), modern/contemporary (equated yield cum variable annuity capitalization). Determination of freehold and leasehold investment/initial/all-risk yield: analysis of transactions involving sales and lettings of comparable freeholds let at rack/full rental value. Virtual/sitting rent calculations. Valuations involving freehold currently let at full rental value (FRV) on full repairing and insuring (FRI) basis and currently not let at FRV and not on FRI basis. Valuations involving deferred receipts and payments, and varying incomes. Effects of capital expenditure and present and future premium payments on rental values and valuations associated therewith. Valuations of leaseholds: long and short terms. Effects of income tax on freehold and leasehold valuations and adjustment to the year's purchase. Applications of statistics and computer techniques in valuation.

ESM 315: Arbitration and Awards I (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain the place of Arbitration in a 21st Century practice;
2. perform a mediatory role in the arrangement of real estate financing and in conflict resolution; and
3. explain the functions of an expert witness in court proceedings or tribunals involving any of the functions stated.

Course Contents

Nature of arbitration; its origin and application to valuation. Act reference to arbitration by consent. Types of arbitration. Statutory and conventional advantages of arbitration. Arbitration and umpires. Principal rules of arbitrators. Reference by order of court; neutral and tripartite panel. Procedure for arbitration award. Expert evidence and proof of evidence. Arbitration of real estate and related disputes in construction industry. Particular skills required of a professional. Costing by arbitrators in the construction industry. Real estate documents and arbitration clauses. Resolution of disputes by arbitration in the allied professions in the construction industry. Distinction between valuation, arbitration and action methods of enforcing, impeaching and award. Arbitration agreement, composition of arbitral tribunal, jurisdiction of arbitral tribunal, award and termination of proceedings, recourse against award, recognition and enforcement of awards; difference between arbitration and conciliation.

ESM 357: National and Rating Taxation (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain landed property taxation as a means of revenue generation;
2. perform valuation for the determination of ground rents, land use charges; and

3. undertake valuation for rating and taxation.

Course Contents

Income tax: nature and incident. Allowances on deductions. Assessment of owners and occupiers of landed property. Taxation of capital estate duty. Capital transfer tax. Elementary principles of national finance with particular reference to central and local government finance. The caucus and principles of taxation. Taxation distinguished from other land burdens. Methods of taxation proprietary interests in land. Income tax. Inheritance tax. Local rates and other statutory charges. National taxation policies relating to land. Organization and administration of rating. Valuation list and preparation objections; proposal and appeals. Assessment of property. Occupation and hereditament. Tone of list; gross value; net annual value; rateable value. Rebus sic stantibus. Rating valuation practice. Hypothetical tenant. Valuation assumptions. Vacant and to let exemptions. Adjustment of gross value to net annual value. Alterations of the valuation list.

400 Level Estate Management

ESM 404: Urban Land Economics

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. make predictions and assessments of impacts of land development projects on the environment media;
2. understand the purpose of Environmental Impact Assessment;
3. become versed in environmental management and control; and
4. understand the measurement and control of pollution, erosion and other natural disasters and its relationship with property value.

Course Contents

Urban economics as a field of study. The nature of urban areas. Problem of urban economy. Urban land use and transportation; congestion, traffic and parking. Technology and city spatial structure and growth. Urban economic base. Pollution and environmental quality in Nigeria. Overview of environmental-oriented policy measures in Nigeria. Urban policy: need for policy, arguments for and against urban policy formulation, antecedent and contemporary urban policy measures in Nigeria. New town development; public and private development. Planning and compensation. Betterment problem

ESM 461: Computer Appreciation in Real Estate

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define and explain the role of Information and communications technology in estate management; and
2. demonstrate the use of ICT for simple professional tasks and services.

Course Contents

Brief history of computer development. Hard ware components of computer. Microsoft Word applications. Microsoft Excel applications. Microsoft Power Point applications. Internet usage; estate management related website guide.

ESM 421 Applied Valuation**(3 Units C: LH45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. define and explain the fundamental principles of valuation to real life valuation scenarios;
2. demonstrate the use of more complex valuations; and
3. Identify and distinguish different valuation concepts.

Course Contents

Combined freehold and leasehold valuations. Equivalent yield valuations. Valuations for surrender/extension and renewal of leases. Marriage value valuations. Double sinking fund valuations. Valuations involving expenditures and their justification, and liabilities. Clearly distinguishing between the following terms/concepts: basis of valuation, purpose of valuation, use/function of valuation and method of valuation

ESM 441: Building Services and Maintenance I**(2 Units C: LH30)****Learning Outcomes:**

At the end of this course, students should be able to:

1. state the essential steps necessary for building inspections;
2. prepare of schedules of condition and dilapidation;
3. identify building defects, diagnosis, remedial work scoping;
4. undertake specifications writing for remedial action; and
5. explain how to organize and manage building maintenance works.

Course Contents

The fundamentals facilities management and the maintenance of buildings as a complex unit including the interests, structure and facilities. Identification of agencies causing decay and change of appearance of buildings, identification of causes of defects in building structures, finishes and services. Alterations, conversions, extensions and improvements of building, including the necessary temporary supports. Designs defects, foundation floor walls, ceilings roofs among others. Access to components to be maintained, mechanical services and their maintenance equipment for building maintenance. Building maintenance management, choice between contract and direct labour in the implementation of building maintenance works. Sustainable building use, computerized property maintenance systems, defects reporting, electronic job orders.

ESM 409: SIWES**(15 Units C: PH 675)****Learning Outcomes:**

At the end of this work experience students should be able to:

1. gain practical experience in several aspects of the profession;
2. develop personal discipline associated with the corporate world and labour market; and
3. apply acquired skills to further learning in 500 level.

Course Contents

Students are supposed to get familiar with the major activities taking place in their places of attachment. Depending on the nature of their places of attachment, they are to participate in activities like map making, planning practices; land, soil and water resources evaluation; human and socio-economic surveys, basic operation of field and laboratory equipment and facilities, practical and operational climatology, instrumentation in geography; and any other assignment given to them by their industrial-based head of department. Report on the entire exercise/ experience.

500 Level Estate management

ESM 501: Advanced Valuation I (3 Units C: LH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. undertake the valuation of specialized properties like hotels and hospitals;
2. conduct the valuation of Plant and machinery, minerals, properties, contaminated land;
3. define and explain the concepts of Taxation and Valuation; and
4. undertake complex valuation for various purposes.

Course Contents

Statutory valuation. Effect of legislation on property value. Current legislation in Nigeria. Valuation of property assets of a company. Role of value in the property market. Trends in value. Mortgage valuation, insurance valuation, going concern valuation. Principles and methods involved in the valuation of company assets. Companies and partnerships. Valuation of goodwill. Valuation of plant and machinery. Statutory valuations: property income/withholding tax, capital gains tax, capital transfer tax, estate duty/probate, stamp duty, property rating. A review of procedure, legislation issues and administration. Asset valuation: principles involved in establishing the value to a partnership, company, government and government agencies of its fixed assets: chattels, land/buildings, roads and other infrastructural facilities. Valuations for way-leave, easement and royalty. Land residual valuation issues; site analysis and valuation. Valuation for loan facility: mortgage and trading stock valuations. Going concern value, and market value valuations of a business. Applications of statistical and computer techniques in valuation. Definition and basic characteristics of common minerals. The legal, political, economic and physical bases of mineral ownership. Exploitation, processing and marketing of minerals and their impacts on mineral values. Methods of valuation of different minerals for different purposes.

ESM 502: Advanced Valuation II (3 Units C: LH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. undertake Valuation of any proprietary interest in land and buildings, plant and machinery and landed property for all purposes and advising on their respective value;
2. advise on the acquisition of land by compulsory purchase and or revocation of rights;
3. prepare claims, settlement of terms with acquiring authorities;
4. present expert evidence on value;
5. offer advice on the value of damages to the environment; and

6. undertake damage assessment valuation for compensation.

Course Contents

Site analysis and site valuation. Capitalization of income from freehold interests in property including DCF approach. Capitalization of income from leasehold property. Dual rate adjusted for tax. Single rate valuation of leasehold interests in property. Categories of leasehold investment and valuation approaches. Valuation of leasehold investment; variable profit rents. Calculation of premiums. Renewal and extension of lease. Cost-in-the market area analysis. Effect of planning, current economic conditions and legislation on value of property. Developmental valuation. Mineral valuations; capital, budgeting, cash flow. Residual techniques of valuation. Valuation of specialized properties including petrol filling stations, hotels. Contemporary methods of valuation: capital asset pricing model (CAPM), real value approach, natural model, modified national model. Valuation of special properties: filling stations, hotels, recreational properties like stadia, privately owned schools, hospitals, and other property equipped for business to earn profit. Issues in mineral, plant and machinery valuations. Insurance valuations. Contemporary methods of income property valuation: historical background, real value approach, equated yield approach, real value/equated yield hybrid approach, capital asset pricing model (CAPM) approach, Arbitrage valuation model, Hedonic Valuation model. Environmental valuations. Compulsory land acquisition and compensation valuation: The Land Use Act and pre-land use Act legislations, severance and injurious affection, disturbance. Agricultural and cultural artefacts valuations. The Estate Surveyor and Valuer as an expert witness. Identifications and definitions of plant, machinery, equipment and industrial buildings/premises in their categories. Survey, inspection and determination of functional and economic lives and efficiency of plant, machinery and equipment. Theories of depreciation and methods of ascertaining accrued depreciation. Various purposes for which plant machinery, equipment and industrial premises may be valued. Different methods of valuing plants, machinery and equipment

ESM 504: Feasibility Appraisal and Project Management

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. At the end of this course, students should be able to:
2. Undertake feasibility and viability studies in relation to proposed developments and comprehensive development appraisals;
3. Perform basic Project Management tasks including project planning; and
4. explain human resources management in complex development projects.

Course Contents

Nature of investment projects: identification and preparation. Application of modern appraisal techniques – discounted cash flow, internal rate of return and net present value, sensitivity analysis, cost-benefit analysis. Principles and techniques of investment appraisal and application to property. Pick and uncertainty in valuation. Effects of taxation and inflation. Estate surveyor as an adviser on investments, property development scheme, property investment markets. Procedure and methods of assessing economic demand for a particular project. Principal sources of finance for funding development, including techniques of direct property financing. Investment decision process. Examination of projects from investment point of view. Sources of information:

financial plans, feasibility studies. Project supervision and management, monitoring and evaluation. Examination of techniques of site evaluation. Relationship between capital return and development yields. Alternative cash flow methods of calculating development costs including the incorporation of building cost inflation and rental growth. Risk in financial appraisals: simple sensitivity and probability analysis, simulation.

ESM 506: Applied Property Management and Project Planning (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. undertake property management tasks involving agency inspections, inventORIZATION, tenant selection, rent collection and general management of landlord and tenant relationships;
2. manage complex buildings and its facilities to ensure a controlled and comfortable working and living environment; and
3. render Project management services to clients.

Course Contents

Development and re-development process. Property management in relation to social, political, economic, physical and location aspects. Property management process – strategy of estate owners and choice of alternative to achieve owner's objectives. Estate-cycle and problems of obsolescence. Principles of estate management applicable to management of public and private estate, new towns, expanding towns, local authority redevelopment area. Implications for estate management of legislation pertinent to relationship between the landlord and tenant. Marketing and agency: legal positions of principal and agent; methods of sale promotion, selling market segmentation; market research, market planning, total project management. Parties involved in property development. Data and information for property development. Sources of finance and funding arrangements for development. Feasibility Studies – residential/commercial properties. Effect of government policy in development process with emphasis on land policy implications. Management of institutional housing and commercial estates: principles, procedures, and problems. Rule of thumb in real estate practice. Common scheduling tools, including critical path method and bar charts as an aid in project planning, budgeting, and cost control. Also introduces the gathering, processing, and evaluation of project information for effective project control.

ESM 508: Professional Practice and Ethics (2 Units C: LH30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define practice ethics and code of conduct in the real-world;
2. explain the basics of small business management;
3. prepare business plan proposals and start up a professional or secular business; and
4. start up a business in private practice involving any of the items/functions listed.

Course Contents

This course is designed to provide a basic knowledge of how the estate surveyor and valuer undertakes his work in a professional manner.

Professional approach: definitions and explanations; rule of professional practice and code of conducts. Nigerian Institute of Estate Surveyors and Valuers. The Estate Surveyors and Valuers Registration Board of Nigeria. Other professional bodies in Nigeria. Professional instructions and government. Professional firms, groups, partnership and their organization and management. Organization of personnel. Job description. Chain of authority. Departmentalization, specialization. Physical organizations. Office records. Communication and co-ordination. Office procedure. Cash-flow. Personnel management. Role of an estate surveyor and valuer in the public and private sectors.

ESM 510: Land use and Resource Management I

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. define the theories and practices of land resources governance, planning, development, utilization and forecasting and appraisals and management;
2. make predictions and assessments of impacts of land development projects on the environment media and the purpose of Environmental Impact Assessment; and
3. provide data for policy formulation on land resources allocation, development, utilization and maintaining a balance in the ecosystem. Fundamentals of environmental management and control, the measurement and control of pollution, erosion and other natural disasters and relationship with property value.

Course Contents

Land Resources. Human settlement and land use in Nigeria. Evolution growth structure and pattern of human settlement. Proprietary land capital and income. Obsolescence and urban renewal. Relocation problems. Economic forces that influence land uses, through succession of land uses and the competition between uses which are evident in the operation of the land market. Economics of land uses in non-market societies. Urban land use and location. Development of the theory of location, economics of location. Land uses and land values, patterns of urban land use. Man-land relationship. Economic and legal concept of land. Rural and urban land uses and theory of allocation. Population pressure and supply and demand for land resources. Urban growth theories: theory of highest and best uses, competition and competing uses. Proprietary land structure in Nigeria. Economic returns to land resources, property values and real estate market, property rights in land resource's location of theory and land uses. Acquisition and transfer of rights. Leasehold system. Property market and estate investment. Estate development. Public control of land use. Land reform, reform objective and methods. Capital costs and rental income. Urban transportation: problems involved in traffic congestion. Theories on road pricing. Transport-land use in Nigeria. Conservation of land resources. National land policy: relative instruments and empirical guidance. Taxation of landed property. Urban environmental pollution management. Use of economic criteria in public investment and planning.

ESM 512: Project Dissertation**(6 Units C: PH 270)****Learning Outcomes:**

At the end of this training, the student should be able to

1. demonstrate an appreciation of and the capacity to recognize the integration and contribution of the various contributory subjects which give the discipline its distinctive and unique kernel; and
2. explain the total body of knowledge acquired, especially in independent and original way, to the solution of specific practical problems.

ESM 583: Research Methods**(2 Units C: PH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. define the meaning data and its use to describe the real-world scenarios;
2. Perform statistical calculations to help understand and present practical data;
3. demonstrate by presenting data analytics skills for tackling practical problems, logically and sequentially; and
4. Undertake Research into the problems of the physical environment.

Course Contents

Identifying potential research areas. Literature review: elements, structure, and importance. Formulating aims and objectives. Types and sources of data for research in construction: past project records, surveys, laboratory investigations. Qualitative and quantitative research methods. Methods of data collection. Interviews: types, objectives, recording. Questionnaire: types, development. Design of experiments (laboratory procedures). Description of materials and methods in experimental research. Hypothesis: formulation of hypothesis; testing of hypothesis; concept of significance. Methods of data analysis; types, choice and description. Interpretation of data analysis results. Computer based analysis. Referencing. Bibliography. Communication skills and oral presentation/defence of research projects.

Minimum Academic Standards**Equipment**

Drawing Boards, T-squares, financial and other calculators, Audio Visual Projector and Accessories. Computer and Accessories (1 PC per 5 students).

Plan Printing machine, Guillotine Cutter, Spiral Binding Machine, 100 metre chains, Video and Digital Cameras, Photocopying Machines, Duplicating Machines, Electric Typewriters and Steel Cabinet.

A Peugeot 504 Station Wagon A bus capable of carrying not less than 40 students for field work.

Staffing**Personnel**

The personnel requirements for the programme should reflect students' population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Library

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories, Clinics, Workshops and Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

B. Sc / B. Tech. Fashion design

Overview

As a matter of human and survival, there are three basic necessities: Food, Shelter and Clothing (Textiles). Textiles are so much an integral part of human existence that they have become the real essence of life without which the whole world will be naked. Fashion is the result of designers and brilliant industrial, commercial and scientific minds interacting together. Developments in Fashion Design have been directly related to progress in the areas of research, innovation, training and manufacture of fibres and fabrics. The BSc. Programme in Fashion Design therefore is designed to produce skilled workers capable of designing, producing and marketing fashion products.

Philosophy

All textile fabrics have to be made-up in one form or another; for clothing, home furnishing and other industrial applications. The fabric manufacturer's product therefore becomes someone else's raw materials. The Fashion Design programme has thus become prompted by the obvious need to train manpower for the development and growth of the garment manufacturing industry in Nigeria, the industry being responsible for the conversion of the fabric manufacturer's products into finished garments. The programme, therefore is designed to produce creative, competent and skilled technicians, technologists, teachers and consultants in Fashion Design for both public and private sectors of the economy. The curriculum adopts effective techniques of instruction, laboratory/studio practical, workshops and industrial training.

Objectives

1. To foster awareness and appreciation of the role that garments manufacturing industry plays in the economic, social and cultural development of society.
2. To enable students, acquire basic knowledge of fashion design concepts, theories, problems and methods in order to apply such knowledge in solving human problems.
3. To enable students, acquire necessary skills that would help them pursue career in areas like tailoring, merchandizing (fashion whole seller or exporter), modelling, stylist, illustrators, teaching clothing design by CAD/CAM, pattern making, photography, costume designing at the private and public sectors of the economy.
4. To instil in students, a sound knowledge of fashion design that would help them carryout functions from the origination to the finishing products.
5. To cultivate in students the ability to apply their fashion design knowledge and skills to the understanding and solutions of societal problems in Nigeria and elsewhere.
6. To develop in students a range of useful skills and competencies for public, private or self-employment.

Employability Skills

The new curriculum when applied effectively will equip Fashion Design graduates with necessary skills to work in public and private sectors of the contemporary digital world (notably and internationally) in an innovative manner. The most prominent of the job of a graduate of Fashion Design include- Self-employment, Boutique owner, Bridal wear designer, Children's wear designer, Fashion accessory designer, Fashion designer, Fashion illustrator, Fashion instructor, Fashion journalist, Fashion stylist, Fashion wholesaler or Exporter, Label Designer, Men's wear

designer, Pattern maker, Visual merchandiser, Retail manager, Textile industry, Fashion Industry, Film industry, Interior design industry, Fashion consultant, Brand manager, Photo Shoot stylist, CAD/CAM Designer, Make-up Artist, Textile colourist, Clothing care.

21st century skills

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Unique Features of the Programme

1. the integration of skills content in the practical modules, which will enable graduates to function in the ever-changing digital world;
2. it provides opportunities for National Skills Qualification Framework to be exposed to the students at higher level of training;
3. the introduction of the application of Computer Aided Design (CAD) and Computer Aided Manufacturing in the programme, execution and management of Fashion Design projects; and
4. the new courses introduced will afford the students a wider area of specialization in preparation for postgraduate training.

Admission and Graduation Requirements

Admission Requirements

Admission into Building Programmes may be through any of the following modes:

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Fine Arts and any other two (2) from the following: Clothing & Textile, Technical drawing, Chemistry and Physics, shall be admitted into the five (5) year programme.

Direct Entry: In addition to UTME requirements above, candidates with NCE or ND should obtain at least upper credit or its equivalents visual/fine Arts, clothing & textiles and chemistry. While candidates with HSE/GCE/IJMB should obtain passes in two (2) subjects, which includes visual/fine, Arts, clothing & textiles and chemistry.

Special Admission:

Candidates seeking special admission at 300 Level must have cognate experience in Fashion Design and a **Portfolio of practical works** to present. They must have obtained an HND or its equivalent and graduated with an average of Upper Credit or B. Subjects taken must include

compulsory subjects listed in 1(a) and (b) above. A pass at 'O' Level in Chemistry and Physics will be of advantage. This is applicable **only** to a five-year programme in fashion design.

Graduation requirements

To graduate, a student should have undergone 3 or 4 years of study depending on his/her entry point including a 6-month Industrial Training. Course workload must meet the graduation requirements of the University. The student must earn a minimum of 120 credit units for the four-year programme and 90 credit units for the three-year (direct entry) programme. In addition:

1. He/she must have passed all the University COMPULSORY courses.
2. He/she must have passed all Departmental/College CORE courses and required electives.
3. He/she must not have spent more than two additional years above prescribed minimum duration specified.
4. He/she must not have less than a CGPA of 1.00 at the end of the program.

Duration of the Programme

The minimum duration of the Fashion Design degree programme is eight (8) academic semesters for UTME students and six (6) academic semesters for direct entry admission candidates. The maximum programme duration is twelve (12) semesters for UTME and nine (9) semesters for direct entry candidates respectively. A students' Industrial Work Experience (SIWES) programme of six months shall be incorporated in the programme.

Course Structure and Learning Outcomes

100 Level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
FAD 101	Basic Design I	2	C	15	45
FAD 102	Basic Design II	2	C	15	45
FAD 103	Fashion Design Illustration I	2	C	15	45
FAD 105	Pattern Drafting & Cutting Room Practice I	2	C	15	45
FAD 106	Fashion Design Illustration II	2	C	15	45
FAD 107	Textile Materials I	2	C	15	45
FAD 108	Textile Materials II	2	C	15	45-
FAD 110	Pattern Drafting & Cutting Room Practice II	2	C	15	45
TOTAL		20			

200 Level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
FAD 201	Introduction to Freehand Drawing	2	C	15	45
FAD 207	Pattern Drafting and Draping	2	C	15	45
FAD 208	Clothing Construction and Tailoring I	2	C	15	45
FAD 209	Clothing Construction and Tailoring II	2	C	15	45
FAD 210	Fashion Accessories I	2	C	15	45
FAD 211	Fashion Accessories II	2	C	15	45
FAD 212	Fashion Merchandising, I	2	C	30	-
FAD 213	Fashion Merchandizing, II	2	C	30	-
TOTAL		20			

300 Level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	30	
FAD 301	Figure Drawing: Anatomy	2	C	15	45
FAD 303	Fashion Modelling	2	C	15	45
FAD 307	Construction, Draping and Flat Pattern	2	C	15	45
FAD 309	Fashion Computing	2	C	15	45
FAD 311	Clothing Construction and Sewing Room Practice I	2	C	15	45
FAD 313	Introduction to Knit Wear	2	C	15	45
FAD 300	SIWES	15	C	-	675

TOTAL		31			
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400 Level

Course Code	Course Title	Units	Status	LH	PH
FAD 400	Figure Drawing	2	C	15	45
FAD 401	Design Criticism	2	C	30	-
FAD 402	Making Dolls and Toys	2	C	15	45
FAD 403	Figure Drawing: Portraiture	2	C	15	45
FAD 404	Construction/ Draping/Pattern for Celebrities – 3D	2	C	15	45
FAD 405	Individual Vision in Fashion Design	2	C	15	45
FAD 408	Conceptual Fashion Design	2	C	15	45-
FAD 409	Fashion Photography	2	C	15	45
FAD 410	Fashion Design: Thesis project, Exhibition and Modelling	2	C	15	45
FAD 411	Developing Fashion Product Design Portfolio	2	C	15	45
FAD 413	Clothing Construction and Sewing Room Practice II	2	C	15	45
TOTAL		22			

Course Contents and Learning Outcomes 100 level

GST 111: Communication in English (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing, Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making among others. Mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 113- Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyze the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyze the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. analyse the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution,

Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

FAD 101: Basic Design I (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyse the basic concept of design with reference to the elements and principles of design;
2. explain the main design objectives such as, functional and non-functional qualities of a design; and
3. form motifs and make designs on paper suitable for fabric design and production.

Course Contents

The foundation focuses on the basic concept of design, with reference to special attention on the elements and principles of design. Identification and selection of materials for basic design work; the basic tools and work space for designer. Practical exploration of the real-life applications of design element and principles.

FAD 103: Fashion Design /Illustration I (2 Units C: LH 15; PH 4)

Learning Outcomes:

At end of the course, the student should be able to:

1. select and use suitable equipment for fashion design;
2. produce a working sketch with the basic body proportion and flesh added to the figure, Know three-dimensional figure;
3. produce a finished garment as determined by the shape of the fashion figure;
4. explain the colour system and how the colour key relates to one's personal colouring;
5. describe the symmetrical and asymmetrical balance in design satisfy the relationship of all design aspects;
6. analyse how the lines on body shape create the silhouette of a garment; and
7. enumerate effects of fabric properties as related to colour and texture on fabric design, and Know how to sketch a clothed fashion figure from life models.

Course Contents

List of equipment for fashion design, study of body proportion, illustrate the basic anatomy at the human body, sketch the figure in a three dimensional form, shade the area in the figure, shade areas in the illustration to show the place of the figure in action, use three dimensional figure to show construction detail on the side of the garment as interesting sleeves and pockets, suggestion of finished garment by using three steps in sketching simple style, sketch garment with detail: darts, yokes, collars, sleeves, pockets, pleats, tucks, gathers, and style lines, cut them into paper sizes,

FAD 105: Pattern Drafting and Cutting Room Practice I (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, the students should be able to:

1. list out all the equipment for pattern-drafting and cutting room practice;

2. describe the safety regulations in pattern drafting and cutting room practice;
3. explain some technical terms, sign and notation used in pattern drafting;
4. discuss the human figure in relation to its motion, height, girth and build;
5. explain body measurements and how to take them for pattern drafting.
6. analyse the concepts of peace, conflict and security;
7. list major forms, types and root causes of conflict and violence;
8. differentiate between conflict and terrorism;
9. enumerate security and peace building strategies; and
10. describe roles of international organizations, media and traditional institutions in peace building.

Course Contents

Pattern drafting equipment: define pattern drafting, explain briefly the activities of cutting room, list the tools and equipment required for pattern drafting.

Safety Regulations: state the general safety precautions in pattern drafting and cutting room practice, observe the safety precaution, carry out basic First Aid Procedure as above.

Technical Terms: explain the meanings of Terms and Abbreviations used in pattern drafting, interpret the signs and notations marked on patterns, use these terms, signs and notations to mark patterns.

Human Figure: explain the flexibility and movement of the neck. Limbs and trunk relative to each other, describe the changes in the dimensions of the limbs and trunks when manipulated, explain the change in shape of the body and its joints when manipulated.

Body Measurement: state the importance of taking body measurements correctly; list the measures necessary for drafting skirts, shirts, blouse, trousers and collars.

FAD 107: Textile Materials I

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, the students should be able to:

1. describe basic raw materials for textiles manufacture materials;
2. list the general principles of processes involved in staple yarn manufacture- objectives of blow room operations, principles of blow room machinery and its operation;
3. analyze the methods of manufacture and numbering of sewing threads; and
4. enumerate the basic processes of fabric manufacture.

Course Contents

Definition of textile fibre and textile terms, Classification of fibres according to their sources or origin, outline the production and world distribution of the major textile fibres, state the properties of textile fibres, test fibres for specific use, explain the principles and processes involved in staple yarn manufacture, explain the objectives of blow room operation, describe the mode of operation of carding machine, list the objectives and needs for combing, explain briefly other methods of yarn production, explain methods of manufacture and numbering of sewing thread, describe the general methods of production of natural sewing threads, explain the methods of manufacture of man-made sewing threads, explain the reasons for the application of finishes to sewing threads and the use various sewing thread for specific purpose.

**FAD 109: Introduction to Fashion Design and Sewing Techniques
LH 15, PH 45)**

(2 Units C:

Learning Outcomes:

At the end of the course, the students should be able to:

1. describe the equipment and accessories used for garment construction;
2. know types of sewing machines and their parts; understand the formations of machine stitches;
3. discuss the functions and characteristics of needles;
4. identify the use of thread in seam formation; and
5. list the uses of cross way strips for binding.

Course Contents

Definitions, terminologies, materials and importance of fashion design. Introduction to fashion design, principles of garment production as related to construction.

in this course, the students will gain basic appreciation and understanding of cutting and sewing technique: prepare them for the apparel industry. The student will learn hand finishing as well as machine sewing techniques, together with their applications. The use of multiple Seam treatments to sew a basic garment and accessories in woven fabric is exposed to the student through practical work

FAD 111: History of Costumes I

(2 Units C: LH 45)

Learning Outcomes:

At the end of the course, the students should be able to:

1. discuss the History of Costumes- definitions of the term 'costume';
2. state various types of costumes, tracing the historical development of costumes from the past to the present times;
3. differentiate the mode of costumes in Africa, Europe, America, Asia, oriental;
4. discuss the importance of documentation in fashion in the case of design appreciation;
5. relate this mode to each cultural background;
6. develop ideas based from this cultural background; and
7. carry out studies on history of costumes and comparing these to the Nigerian experience.

Course Contents

History of Costumes: define costume, state the various types of costume, and trace the historical development of costumes from the past to present times.

Traditional and Contemporary Costumes: explain the difference between traditional and contemporary costumes, discuss the various costumes used within African context with emphasis on Nigeria, and determine effect of culture, religion and tradition on costumes.

FAD 102: Basic Design II (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, the students should be able to:

1. apply the theoretical fundamentals covered in covered in Basic Design I.
2. describe the ways elements are positioned on a page; and
3. apply the principles of effective alignment, proximity, repetition, hierarchy, balance and contrast matter in design.

Course Contents

Practical exercises are taken in both two- and three-dimensional design with focus on the use of design elements based on design principles. Focus on two elements of a design that are presented in opposite ways. Create a focal point, or a spot to which your eyes is naturally drawn. Observe to see how one element becomes more immediately visible than its contrasted opposite, giving it more visual weight and attracting the eye. In form of composition, position the elements in relation to each other to create alignment in design. Group all elements like words, shapes or images near each other to reinforce an idea or relationship and create a focal point for a design that draws the eye. Repeat elements like words, colour or textile design treatment, to reinforce an effect. Create a textile design pattern that suggests rhythm.

FAD 104: Fashion and Creative Surface Design (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, the students should be able to:

1. develop an individual fashion, surface and embroidery design identity and philosophy;
2. create a technical practice in embroidery and other local craftsmanship and techniques;
3. collect innovative samples, prototypes that are evidences of creative textiles and production skills; and
4. create a professional portfolio that effectively communicates project brief outcomes in relation to specific market sectors

Course Contents

Definition of the term 'surface design'; Two dimensional designs for surface coverings are explored by concept creation and execution with inspiration from natural and man-made surface textures, patterns, animate and in-animate. Exercises shall be taken in design for leather works, beads works, backdrops, mural paintings, wall papers and many more.

Fashion and surface exploration-study prints, embroideries, appliques, sequence for surface direction and upcoming fabric materials, trim detailing to be implemented in fashion and textiles; innovative design development- Fabric (creation of pillow cases, duvets, bed linen), Wall art (LED typography, graffiti, painting), Book covers (comic book covers, novel covers, children book covers); new fashion identity

FAD 106: Fashion Design /Illustration II

(2 Units C: LH 15; PH 45)

Learning Outcomes:

On completion of the course, the student should be able to:

1. know how to select and use suitable equipment for fashion design;
2. know how to produce a working sketch with the basic body proportion and flesh added to the figure; know three-dimensional figure;
3. finished garment as determined by the shape of the fashion figure;
4. know the colour system and how the colour key relates to one's personal colouring;
5. know how the symmetrical and asymmetrical balance in design satisfy the relationship of all design aspects;
6. know how the lines on body shape create the silhouette of a garment;
7. understand the effects of fabric properties as related to colour and texture on fabric design;
8. know how to sketch a clothed fashion figure from life models; and
9. understanding the current trends in fashion designing.

Course Contents

Equipment for Fashion Design: list the equipment and materials for diagrammatic and presentation work: pencil, felt pen, charcoal, colours, brushes, cardboard paper, sketchbook, ruler. Note the variety and quality of equipment and materials obtainable from the market; use these materials and equipment for Fashion Design works.

Body Proportion: illustrate the basic anatomy in the human body, illustrate the differences between the male and female anatomical parts and those of children, draw the basic body proportions using eight heads methods based on 2.1 and 2.2 above, display the different poses of the fashion figure using the eight heads method. Three-Dimensional Figure: sketch the figure in the three-dimensional form, shade areas in the illustration to show the plane of the figure in action, observe the way the centre front line of the figure is altered as the body turns. Finished Garments: sketch garments with details: Darts, \yokes, Collars, Sleeves, pockets, pleats, Tucks, Gathers and style lines, cut them into paper sizes.

Colour Systems: compare the Prang and Mussel colour charts stating the primary, secondary and tertiary colours, relate the dimensions of colour: Hue, Value, Chrome and Intensity, relate colour value to clothing selection. Symmetrical and Asymmetrical Balance in Design: difference between formal and informal balances, apply the difference kinds of balance in the principles of design, and illustrate design using the combination of formal and informal balance. Body Shape: relate the effect of line to the body shape and garment, illustrate the use of straight and curved lines in a design: vertical, horizontal and diagonal lines, display the various lines. Effects of Fabric Design: define the elements of texture: weight, size, bulk and shape, describe the components of texture, fibre, yarn and weave, apply the use of texture in fashion design. Life Models: draw from life models, lay emphases on garments worn by the fashion models, produce sketching of fashion life models with worn garments for display. Current Fashion Trends: observe current merchandise through mass media, fashion journals from home and abroad, shops and store display and fashion shows, record graphically collected materials on current trends, forecast future trends in fashion.

FAD 108: Textile Materials II**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the end of the course, the students should be able to:

1. discuss the principles, methods of woven, non-woven, knitted laminated fabric manufacture;
2. state the various materials and equipment used in the production of fashion goods; and
3. display finished products in fairs or exhibitions.

Course Contents

The Principles, Methods of Woven, Non-Woven, Knitted, and Laminated Fabric Manufacture: explain woven, non-woven, laminated, knitted fabric, state the importance of each fabric in garment production, and identify the various types on 1.1 above.

Textile Colouration and Finishing Processes: state the types of impurities present in grey state materials, classify dyes, explain the basic theory of dyeing.

FAD 110: Pattern Drafting and Cutting Room Practice II (2 Units C: LH 15; PH 45)**Learning Outcomes:**

On the completion of the course, the student should be able to:

1. know how to select and use suitable equipment for fashion design;
2. know how to produce a working sketch with the basic body proportion and flesh added to the figure; know three-dimensional figure; and
3. finished garment as determined by the shape of the fashion figure.

Course Contents

Know the standard basic block patterns for various garments and garment parts; State in chronological order, the steps in pattern drafting; Know how to alter block patterns; Know how to locate, transfer and manipulate darts to suit different style and fit of figure; Understand the pattern grading for basic block.

FAD 112 Wardrobe Planning**(2 Units C: PH 45)****Learning Outcomes:**

At the end of the course, the students should be able to:

1. describe the 'term wardrobe'; analyse the factors that influence clothing selection;
2. plan a wardrobe and explain the benefits of wardrobe planning;
3. describe the effects of clothes on personality; and
4. analyse basic rules for wardrobe planning.

Course Contents

Explain the meaning of wardrobe; discuss wardrobe in relation to undergarment-brassier, pants, slips, vest, singlet, girdles, corsets; outer garment, accessories and cosmetics -dress, skirts, trousers, shorts, slit and kaba; discuss the effects of good grooming on person- assets, present wardrobe, finance and needs; important points to be considered when planning a wardrobe-money available, figure type and complexion, age,, physical condition, status, the existing wardrobe; describe factors in selecting family clothing-babies, pre-schoolers, the school child,

adolescence, adults, the elderly and expectant mothers; explain some reasons why wardrobe should be planned.

FAD 114: History of Costumes II

(2 Units C: LH 30)

Learning Outcomes:

On completion of this course, the student should be able:

1. distinguish between traditional and contemporary costumes;
2. state the various contributions made by some notable fashion designers in costume development, analyze the impact of history of costumes to the study of fashion education; carry out case studies of traditional and contemporary costumes; and
3. compare these studies to the Nigerian experience.

Course Contents

Traditional and Contemporary Costumes: explain the difference between traditional and contemporary costumes, discuss the various costumes used in African context with emphasis on Nigeria, and determine effect of culture, religion and tradition on costumes.

200 level

GST 211- Philosophy, Logic and Human existence

(2 Credits C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyze the concept of humanity, its origin, philosophy and cosmic environment;
2. improve their logical and critical thinking skills;
3. identify the basic roles of science and technology in human society;
4. describe renewable and non-renewable environmental resources available in the Nigerian society;
5. identify resource conservation tools and techniques for sustainable environment;
6. analyze environmental effects of plastics, and other wastes;
7. suggest possible management techniques and solutions to identifiable environmental challenges faced in different areas of the Nigerian society; and
8. list and describe unethical behavior patterns that are capable of hindering human societal growth and development.

Course Contents

Concept of humanity, its origin, philosophy and cosmic environment. Concepts and techniques in logic and critical thinking. Science and technology in human society and services. Renewable and non-renewable environmental resources. Climate change and the principle of sustainable development. Environmental effects of plastics, and other waste products. Elements of environmental studies for productive, safe and healthy living. Environmental Challenges - urbanisation, environmental pollution and degradation, soil erosion, desert encroachment, soil degradation and flooding. National Development Plans towards sustainable environment. Trends in global action towards environmental sustainability.

GST 222- Peace and Conflict Resolution**(2 Credits C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

FAD 201: Introduction to Freehand Drawing**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, the students should be able to:

1. observe and present still-life objects from the basic shapes and forms they are made of;
2. describe techniques for the representation of the effects of light on object by means of exploring various grades of pencils as the basic drawing tools; and
3. create exercises to increase the flexibility of wrist and arm movement are essential.

Course Contents

Design Elements: define design elements of form-shape-space and line, state each of their usefulness to fashion production, use the element of garment production.

Shape of Face: draw the face features: Eyes, Nose, Mouth, Ear, relate the features to the shape of the face, relate the face to the neck. Types of Garments: sketch garments with details: Darts, Gores and Yokes, use the sketches for production samples. Creating Various Styles: sketch the given style, interpret details of the given design, and modify the given details to create new styles.

FAD 203: Fashion Design Illustration III (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. explain the design elements of form – shape – space and lines on a fashion design;
2. draw the shape of the face in relation to the neckline of the garments;
3. describe how to illustrate various types of garments of a fashion figure;
4. explain the techniques of creating various styles from given design-sketching the given style;
5. interpret details of the given design, modifying the given details to create new styles;
6. relate the created styles to the original design by sketches, notes or descriptions; and
7. displaying various styles on show glass.

Course Contents

Design Elements: define design elements of form-shape-space and line, state each of their usefulness to fashion production, use the element of garment production.

Shape of Face: draw the face features: Eyes, Nose, Mouth, Ear, relate the features to the shape of the face, relate the face to the neck. Types of Garments: sketch garments with details: Darts, Gores and Yokes, use the sketches for production samples. Creating Various Styles: sketch the given style, interpret details of the given design, and modify the given details to create new styles.

FAD 205: Advanced Fashion Design (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. analyze various sources of design inspirations-explaining design inspiration, stating types of design inspirations;
2. describe the importance of design inspirations in relation to fashion designing,
3. identify various sources of design inspiration with the use of TV, Newspapers, Magazines, Fashion Shows, Objects, Environment;
4. develop unique designs from the above sources;
5. interpret design inspirations with other specifications by taking photographs of various objects for fashion inspiration;
6. develop and print the photographs; and
7. draw and mount various inspirations for displays.

Course Contents

The Importance of Professional Manufacturing of Garment: design different styles of garments, produce samples of a given garment, cost the price of the garment using the market situation.
The Various Sources of Design Inspirations: explain design inspirations, state the types of design inspirations, and describe the importance of design inspirations in relation to Fashion Design.

FAD 207: Pattern Drafting and Draping

(2 Credits C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. identify the principles and practice of reproducing patterns from made up garments;
2. state the principles of modelling;
3. explain the reasons and scope of draping as well as the basic principles of draping; and
4. produce working flat patterns for garments by draping.

Course Contents

The Principles and Practice of Reproducing Patterns from Made-up Garment: state the reasons for reproducing patterns from garments, differentiate between patterns for tailored (Boat-poke) and those for mass production of garments, produce patterns by tracing out garment patterns on to muslin.

The Principles of Modelling: select appropriate fabric for modelling by choosing toile of similar weight and fabric structure, indicate positions on models, produce flat pattern from modelled toiles with ease allowance.

Production of Working Flat Pattern for Garment by Draping: explain the reasons and scope of draping, state the basic principles of draping, select suitable model and toile for draping.

FAD 209: Clothing Construction and Tailoring

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. describe various machinery used in the industries for garment production;
2. discuss the maintenance care of machinery used for fashion production;
3. identify the use of structural additives in garment in construction;
4. describe the general manufacturing processes of different garments;
5. explain sewing quality standards required for specific garment by giving examples of threads for different seams, fabric and garments; and
6. test the appropriate threads for different purposes.

Course Contents

The Various Machineries Used in the Industries for Garment Production: list the various types of machines and equipment, state each of their functions and operate each machine for garment production.

The Maintenance Care of Machinery: list common faults in machines; state the steps to rectify them, carryout routine maintenance of the machines and equipment.

The Use of Structural Additives in Garment Construction: Select structural additives necessary for different garment applications, explain the necessary for such additives, and determine the method of insertion or attaching the above and record details.

The General Manufacturing Processes for Different Garments: describe the requirements for the manufacture of specific garments; identify the special problems related to the specific garments in 4.1 above.

The Sewing Quality Standard Required for Specific Garments: give examples of threads for different seams, fabric and garments, select by sew ability tests the appropriate threads for different purposes, produce simple thread specification for tests carried out in 5.2 above.

FAD 211: Fashion Accessories

2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. describe colours as it affects ceramic, plastic bead wares in fashion accessories;
2. identify different colours in ceramic, beads or plastic materials, using tie-dye, marbling, batik or print-making to create fashion accessories;
3. list tools used for producing fashion accessories; and
4. mould clay with hands to produce fashion accessories, creating designs on empty tins or bottle covers using different sizes of nails for jewellery production.

Course Contents

Colours as it affects Ceramic ware in Fashion Accessories: identify the different colours in ceramic materials, list tools used for producing fashion accessories, mould clay with hand to produce fashion accessories.

FAD 213: Fashion Merchandising

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, the students should be able to:

1. describe merchandising and fashion concepts;
2. personnel merchandizing responsibilities;
3. explain fashion merchandising as it affects market and consumer requirements;
4. select specific items of merchandise and making them available whenever needed; and
5. Create ways of dealing with consumer through advertising and other media.

Course Contents

Consumer demand for certain kinds of merchandise using these concepts, market and specific items of merchandise. Plan and estimate of merchandise, consumer demand and estimate, consumer requirements, merchandise relating to market search, items of merchandise and availability, merchandise, advertising and other media.

FAD 202: Freehand Drawing II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. draw with ease at any object placed before him/her (without the use of ruler, T-Square, set square); attempt rapid and illustrate quickly without minimal mistake;
2. draw various forms, from natural landscapes to human figures;
3. draw human activities and postures in clothed figure without the aid of any drawing tools; and
4. display the works produced from the drawing.

Course Contents

This course expands on the fundamental covered in Introduction to Freehand Drawing. Composition of objects is introduced, with emphasis on relationship parts, proportion and enter play of light. Variety of media is used to execute studio exercises in which students are expected to demonstrate mastery of the techniques of image creation.

FAD 204: Advanced Fashion Design and Production (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. outline the various textiles materials notions used for fashion design;
2. carry out methods of production test;
3. identify the finished products for test;
4. list various materials used for testing on garments, testing those garments for durability, conformity;
5. analyze current fashion trends in the Nigerian fashion design industry by explaining fashion trends in Nigeria;
6. state different fashion trends from 1900 to 1960, tracing the revolutions that have occurred since independence, comparing fashion trends as it affects culture, religion, ethnic groups; and
7. determine the impact of fashion trends of the following groups: age, sex, status, religion, organization, appraising the current vogue.

Course Contents

The Various Textile Material Notions: list various types of textile materials available in market, determine the extent of texture in woven fabrics, and compare their various uses in the Nigerian scene.

The Methods of Carrying out Production Tests: identify the finished products for test, list the various materials used for testing on garment, tests these garments for durability, conformity.

FAD 206: Production Management

(2 Credits C: LH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. conduct work study to all manufacturing situation;
2. identify production planning and control;
3. design forms for visual presentation; and
4. use these forms for visual presentation, prosing methods of controlling work progress to meet market and production objectives.

Course Contents

Work Study to all Manufacturing Situation: interpret safety regulations in the clothing industry, state the various clothing categories, identify employee on clothing manufacture.

Production Planning and Control: state the methods of collecting, presenting and evaluating management data, design forms of visual presentation, use these forms for visual presentation.

Human Resources: state the factors to be determined in sales forecasting, determine the garment ranges of structure for market segmentation and product line, and state their price levels.

FAD 208: Clothing Construction and Tailoring II

(2 Credits C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. analyze various sewing defects;
2. present overall assessment of garment quality with respect to sewing;
3. explain the quality and cost implications of different assemble methods;
4. relate the methods to unstructured: Jackets, Slacks, Skirts, Blouses, Dresses, Shirts;
5. describe different methods used in the assembly of the garments;
6. explain the functions of thread making, padding, stitching, under basting by relating them to tailored garments;
7. Explain the importance of final pressing given to garments;
8. state the peculiar process on tailored garments; and
9. describe the different methods of sewing processes.

Course Contents

Various Sewing Defects: probable causes of sewing defects in samples, outline remedies for identified sewing defects, and propose preventive measures.

The Overall Assessment of Garment Quality with Respect to Sewing and Assembly: describe assembly defects caused by error arising in the following- marking cutting, fusing, sewing operations, under the top pressing and finishing, identify the probable causes of assembly defects, identify remedies for specific assembly defects.

The Different Methods Used in the Assembly of the Garments: explain the quality of cost implications of different assemble methods, define quality standard in sub-assembly and final assembly, and devise inspection method related to quality.

The Importance of Final Pressing Given to Garments: identify machinery in operation (Factory visits), make reports on equipment used, state the sequence of operations related to specific garments.

The Peculiar Process on Tailored Garments: explain the functions of thread making, padding, and stitching, under basting, relate them to tailored garments, make samples in each case.

The Different Methods of Sewing Processes: describe the system of garment manufacture, distinguish features and uses of various types of machines attachments and work aids, apply these methods and standards of making garments in relation to quality and price.

FAD 210: Fashion Accessories II

(2 Credits C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the students should be able to:

1. describe the methods of producing costume jewellery;
2. explain how to execute practical and experimental exercises in accessories design and trend that can help student develop his ideas, from concept through to completion;
3. describe how to complete effective research and draw inspiration from pre-existing accessories that appeals to student;
4. create a range of final accessories designs; create designs that match with technical specifications.
5. develop curiosity at utilizing visual materials for costume jewellery; and
6. displaying of finished product for critique and exhibition.

Course Contents

The methods producing costume jewellery: original designs for costume jewellery, design jewellery and accessories to suit specific outfit or garment. New and traditional methods of drawing and recording ideas through different media to develop a creative style of his own. An accessory design portfolio of 5-10 design that can be presented in different media. Tools used for jewellery making.

FAD 212: Fashion Merchandising II

(2 Units C: LH 45)

Learning Outcomes

At the end the course, the student should be able to:

1. describe merchandising and fashion cycle concept,
2. identify the stages of fashion cycles in relation to innovation process;
3. relate the concept of fashion diffusion to the various stages of fashion cycle by comparing the end results;
4. carry out case studies of using fashion cycle concepts in your area of operation; and
5. identify the fashion market place.

Course Contents

Merchandising and Fashion Cycle Concept: define fashion cycle, state the types of fashion cycle: buying and selling cycle, determine the impact of these cycle to fashion design practice. Defining the termed market place, stating the characteristics of a market place, locating the fashion market place, analysing the role of retailer, consumer and middle men in the market place, carrying out case studies of fashion market in your state of operation by using various tools.

FAD 214: Computer Application in Textile Design**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, the student should be able to:

1. demonstrate employable skills and a commitment to professionalism in operating a variety of advanced design software; and
2. solve a range of problems using design productivity applications and adapt quickly a new software release.

Course Contents

The course covers the general theoretical application of computer to design processes. An overview study of applications are made with a view to understanding their capabilities and specific applications as interfaces that facilitate the production of designs of design across the wide range of design professions. Hardware devices, peripheral accessories and system configurations suitable for professional design studio are highlighted. Computer as a design tool that is presented for execution of simple plug-in or task in all aspects of visual arts, especially textile design and fashion studies. Digital processes are emphasized in lectures, demonstrations and assignments using industry standard application programmes for the mentioned fields or study-areas. Manipulation of computer software such as textile vision, pattern lab, lectra vision, Pro-design, Pro-weave, Prima vision, AVA, Adobe Illustrator and the likes.

300 level**GST 312- Peace and Conflict Resolution****(2 Units C: LH30)****Learning Outcomes**

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute

Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

FAD 301: Figure Drawing: Anatomy (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the student should be able to:

1. explain basic anatomical relationship relevant to descriptive drawing of the human form;
2. demonstrate competence in linear methods of drawing images of the life model;
3. identify some basic proportional relationships of life model; and
4. analyze rhythm of the body and natural forms and how they exist in the whole and parts of the figure.

Course Contents

Basic skills of drawing human form, including anatomy, observation of the human form and fundamental exercises in gesture, contour, outline and total modelling. The human physique – characteristics and proportion; relaxed and tense human muscles; wet and dry skin; formal contrasts of the young and old; reclining figures and foreshortening; silhouetted figures.

FAD 303: Fashion Modelling (2 Units C: LH 45)

Learning Outcomes

At the end of the course, the student should be able to:

1. demonstrate basic fashion modelling techniques and have a better understanding on how to compete in the modelling industry;
2. establishing belief and preparing his product.;
3. establish career path and setting specific goals;
4. capture ones look in modelling; auditioning and the run way;
5. connect with industry for future career in modeling outcome;
6. find ways on how to break into the modelling industry;
7. find ways how to get an agent;
8. create run away wall and how to pose; and
9. create ways on Show to achieve career longevity in fashion modelling.

Course Contents

Definition of the term 'Model' and 'Modelling' in fashion design, differentiate the two and their types; explain the steps involved to start modelling; discuss fashion modelling and guides to modelling industry; state guides to becoming commercial model; procreate digital illustration Apps for digital fashion- Nail Art, Physical Design, Hair Styling, Maple Motion, Acting. Portraiture. Different types of Modelling; describe what is an agent and caring for your body as well as plus-sized modelling; describe modelling industry vocabulary; explain modelling industry practical issues; explain how to manage modelling career as well as how to improve social media management in modelling; describe safety and legitimacy in the modelling industry.

FAD 305: History of Design (2 Units C: LH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. provide history of textiles, clothing and fashion design;
2. produce visual presentation based on research into a specific era of design history;

3. identify stages in the development of textiles, clothing and fashion design from early textile and costume to contemporary textiles; and
4. develop aesthetic appreciation through analysis of visual communication.

Course Contents

Key movements in the history of textile fashion, key artists in the history of textile and fashion design, key design elements from identified movement /period of fashion design, identify key technological breakthroughs that have influenced textile, clothing and fashion design, identify key designers who have participated in the design profession, elements and principles of design, use examples to illustrate principles of design. Pivotal events and achievements that led to the current state of integrated communication design. The unceasing quest to give form to ideas is traced from the pictographs painted on cave walls to the latest imaginative designs. Through lectures, seminars, videotapes, discussions, presentations and research, students are introduced to the creative thinkers, important innovations and breakthrough technologies that have shaped the evolution of visual communication.

(This course is taken by specialisation students in Ceramics Graphics and Textiles)

FAD 307: Construction, Draping, and Flat Pattern (3 Units C: LH 15; PH 45)

Learning Outcomes

At the of the course, student should be able to:

1. demonstrate basic design elements and fabric draping techniques resulting in a basic sloper set for flat pattern original design;
2. transfer draped garment to flat patterns with the sloper pattern drafting process; complete assembly instructions and specifications for garment construction; and
3. discuss fabrication choices and fabric type requirements

Course Contents

This course is designed to allow students to develop and build upon the pattern making and construction skills learned in previous courses. Students will evaluate and translate key elements from an existing designer runway look and from their own two-dimensional designs to create customized patterns and construct, fit and correct garments to industry standards. New construction and finishing techniques will also be introduced.

FAD 309: Fashion Computing (3 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. manipulate electronic patterns and create other garment styles using Gerber Accumark Pattern making software; and
2. display the patterns for critique and exhibitions.

Course Contents

This course is designed to further acquaint students with design techniques and CAD that enhance design skills required by the fashion industry worldwide. Through visuals and easy steps, the students are introduced to the use of the most popular graphics software used in the fashion industry. Using Adobe Photoshop, Adobe Illustrator, Valentina, Digital Fashion Pro and Gerber Accumark software, students will learn how to use advanced technology to digitally enter patterns

into the computer, alter, and make patterns for a variety of silhouettes. Students will also grade patterns for a large range of sizes.

FAD 311: Clothing Construction and Sewing Room Practice I (3 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the student should be to:

1. list the equipment and accessories used for garment construction such as tailor's chalk, skirt marker, dummy, and sewing machines, explain the importance of tailor's chalk in clothing construction, describe the functions of sewing machines and its parts;
2. outline the hazards in a garment's factory or workshop with a view towards a safe operation of machines.
3. explain the terms commonly used in the fashion trade, understand the formation of hand stitches and their uses in garment assembly;
4. describe the theory and construction methods of common seam types.
5. explain the uses of cross way strips for binding, types of sewing machines and the functions of their parts;
6. identify the formation of machine stitches and their uses in garments, understand the functions and characteristics of needles; and
7. describe the use of thread in seam formation.

Course Contents

Equipment and Accessories used for making garment: the sewing room equipment and accessories Tailor's chinks, skirt maker, dummy and sewing machines, explain the importance of the tailor's chalk in clothing construction, explain the use of thread in seam formation.

Hazards in garment factory: the major responsibilities of the employee under the Health and Safety Work Act, identify the dangers associated with machine parts when working with equipment in garment factory, detect the dangers associated with moving belts, chains, ropes and driving pulleys.

Terminologies used in the Fashion Trade: the terms commonly used in the fashion industry, define the common terms commonly used in the fashion industry; apply these terms commonly used in the fashion industry. Hand Stitches and their uses: definition of hand stitch, describe each stitch type, make samples of each stitch type. Construction Method of Common Seam Types: define the term "seam", make samples of all the seams to an acceptable standard. Crossway Strips for Binding: define crossway strips; state the formation of bias binding. Types of Sewing Machines: adjustment of the stitch size, control sewing forward and reverse. Stitching Machines: define stitch, define the stitch type. Characteristics of Needles: parts of needle, identify the various sizes of needles, and description of various forms of needlepoints. Use of thread in seam formation: selections of suitable sewing threads using numbering system, use suitable sewing threads using numbering system.

FAD 313: Introduction to Knitwear**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, student should be able to:

1. describe the classification, structure, properties and construction of various knitted products;
2. analyze fabrics and structures in clear knitted examples and describe and document these; and
3. carry out and run experimental design work in knitting technology;

Course Contents

Basic binding theory for weft knitting, sketch work on selected knitting machines. develop the processes of creating knit fabrics, learn knitwear terminology, and experiment with knitwear fabric designs. Students will compose different knit materials by a variety of techniques, including basic hand knit, crochet, and single-bed knitting machine techniques. Surface design methods, such as felting, embroidery, and basic macramé, will also be practiced.

FAD 300 SIWES (15 Units; C; PH 675)**Learning Outcomes**

At the end of SIWES, the student should be able to:

1. Acquire the practical knowledge that is peculiar with industry in his area of specialization;
2. Acquire experience in the aspect of industrial production as against the theoretical experiences gathered mostly in the lecture halls;
3. Generate a report based on the experiences and projects carried out with the ability to apply Fashion Design Fundamentals;
4. Demonstrate competence in written and oral communication;
5. Develop ability to work as an individual and as a team member with the capacity to be a leader or manager as well as an effective team member; and
6. Master the professional and ethical responsibilities of a Fashion Designer.

Course Contents

Student's Industrial work experience of 3 months' duration. Students' reports will be presented in a seminar. Students would have, before this time, in collaboration with supervisor and the Department secured an appropriate place to have industrial experience in their areas of specialisation.

SIWES placement should be done at the end of the first semester 300 Level. During the SIWES period, students should keep their eyes open to various aspects of research and travel related to the fashion industry, such as transportation, scheduling, budgeting, professional practices, tools, fabrics, presentation, critique and develop a sketchbook for fashion, textile and knitwear. Students are encouraged to visit fashion shows, boutiques and study the dress style of celebrities; ceremonial wears in weddings and festivals, so as to appreciate trends in fashion around them. They are also encouraged to collaborate with their classmates to generate hands-on group projects.

The Department should develop a list of potential areas appropriate industries with the following information: addresses of location, telephone, email and contact person.

The programme takes the full semester and is graded as follows:

i, Industrial Experience (Evaluation by employer and supervisor) = 70%

ii, SIWES Presentation (by the student) to Faculty = 30%. The presentation is treated like an examination done and assessed on the same day. *Students are encouraged to learn software applications during this period for their chosen area of specialisation and produce a portfolio to be assessed at the end of the SIWES programme.*

400 level

FAD 401: Design Criticism

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. explain the basic components of design criticism;
2. participate in creating a basic criticism of a work of design; and
3. discuss and apply the element and principles of design criticism to fashion design project.

Course Contents

Definitions of design criticism; the components of design criticism; Aesthetic and functional theories of design criticism; the formation of design criticism; visual vocabularies of design criticism: Diverse critical models for interpreting design: Politics of display and representation in design criticism.

FAD 403: Figure Drawing: Portraiture

(2 units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. describe sense of character in a portrait. in the way one selects and handles specific details;
2. identify the subject's age as an important aspect of a character study in drawing a portrait; and
3. explain the essentials that both the colours and the surface qualities of the drawing contribute to good-nurtured portrait

Course Contents

Proportion, Pose, interpretation, and reinterpretation of the figure. Component parts of the human body and their characteristic forms; naturalistic and conceptual rendition of human forms; decorative and ornamental rendition; creative interpretation of subject. The use of conventional and unconventional materials and media.

FAD 405: Individual Vision in Fashion Design

(3 units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. analyse and develop individual design ideas and philosophy; and
2. develop professional presentation and showcase their individual designers' identity.

Course Contents

Backed with technical skills, developing a unique drawing style, the presentation of skills to expressing individual design directions. Drawing knowledge and experience from the fashion

industry, learning the principles of price point, becoming acquainted with domestic and international market places

FAD 407: Fashion Portfolio (3 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. display work in the best possible way;
2. prepare him for the work of fashion, when he can grab job opportunities by showcasing and explaining their talents through portfolio;
3. prepare his portfolio in digital as well as other modes of presentation; and
4. showcase, discuss and explain his work professionally.

Course Contents

In this course, a student prepares to enter the fashion practice world through a more professional presentation and computer skills. The student builds a branded professional portfolio. The student is encouraged to create a web portfolio. Prepare for self-employment, seek commission of employment.

FAD 409: Fashion Photography (3 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. work individually and collaboratively in the studio environment and on fashion locations;
2. develop as creative professionals with personal vision;
3. develop his capacity to exercise specialist and transferable skills in the contextualization of the fashion image in line with professional demands of the industry; and
4. provide specialist knowledge for employment within the fashion photography industry.

Course Contents

Definitions of photography, camera, types of cameras, analogue and digital camera, parts of camera, production of skills in analogue and digital photographic technologies, demonstrating proficiency in post-production, editing, sequencing and production of original outputs in range of fashion contexts, application of creative direction to targeted fashion audiences through development of specialist photographic production skills and critical investigations.

FAD 411: Developing Fashion Product Design Portfolio (3 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. use the product design and development process as means to manage the development of an idea in fashion from concept through to production;
2. demonstrate and employ hand drawing and drafting principles to convey fashion design concepts; and
3. employ research and analyses methodologies as it pertains to product design process in fashion design projects.

Course Contents

In this course, the student is introduced to product development, research existing brands to develop ideas for new products, conduct trend research, create storyboards, sketch flats, and propose new products. The topics to be treated in the course will include consumer markets, fabrication, roles and responsibilities within the supply chain, product development, and fashion product categories.

FAD 413: Clothing Construction and Sewing Room Practice II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, the student should be able to:

1. describe the types of facings, interfacings, and interlinings- define the term 'facings';
2. explain with the aids of diagrams the construction of: shaped facings, facing on arm hole and facing on neck edges, define 'interfacing';
3. explain the uses of interfacings;

list the various types of necklines and finishing;

4. identify the types of openings, waist bands and their carriers.
5. identify the types of fastenings and their uses-use fastenings on garments for functional and decorative purposes;
6. demonstrate the construction and setting of collars as well as hems and decorative finishing;
7. discuss the types of sleeves and methods of setting in the sleeves; and
8. demonstrate the making of cuffs and their attachment to sleeves.

Course Contents

Types Facing, Interfacings and Interlining: define the term facing, define interfacing, and use interlinings for garment production.

Various types of Necklines and Finishing: list the types of necklines: V-necks, straight neck, round neck, square neck, scalloped neck and sweet heart neck, construct various necklines, apply various necklines finishing.

Types of Openings and Waist Bands: define opening, draw the suitable position for openings on garments, define waistband,

Types of Fastenings and their uses: use fastenings on garments for functional and decorative purposes, attach fasteners to garments: chips, straps, ribbons, strips, buttons, hooks and eyes, loops and bars and press-studs, display the finished fasteners on garments.

Construction and Setting of Collars: describe with aid of diagrams the construction of a collar, produce the various collars for displays.

Hems and Decorative Finishing: identify hems of garments, describe preparations of hems dresses and skirts, and outline treatment of hems.

Types of Sleeves and Methods of Setting them: list types of sleeves, construct sleeves, produce samples for various sleeves.

Making Attachment of Cuffs to Sleeves: describe with the aid of diagram the construction of a cuff to sleeves, attach the sleeves by: self-neatening cuff with overlap, a cuff with the use of cross-way strip.

Making of Pockets: list types of pockets, explain the use of functional and decorative pockets on garments, and construct a garment from original design project.

FAD 400: Figure Drawing (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course student should be able to:

1. describe the fundamental elements and principles of art and design and their integral relationship to the drawing process;
2. explain the basic proportion of human figure; use his understanding to practice figure drawing; and
3. develop stick figure drawings to finished figure drawing.

Course Contents

Proportion, Pose, interpretation, reinterpretation of the figure. Component parts of the human body and their characteristic forms; naturalistic rendition of human forms; decorative and ornamental rendition; creative interpretation of subject.

FAD 402: Making Dolls and Toys (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. describe the age of the child he is creating a toy for;
2. discuss the safety concerns or issues with a child playing with this toy;

Course Contents

Different craft techniques: adhesives, applique`, Bias Tape, Casings, Corners and curves, Elastics, Embroidery, enlarging patterns, Fabrics, Fasteners, Gathering, Hand Sewing, Hems, Interfacing, Machine Stitching, Seams, Stuffing, Transferring Markings, Trims. Drawing patterns in their actual sizes. The making of different Dolls and Toys giving them their distinctive identities/personalities.

FAD 404: Construction/Draping/ Pattern for Celebrities – 3D (3 Units; C) (LH 15, PH 45)

Learning Outcomes

At the end of the course, student should be able to:

1. describe the various machinery used in the industries for garment production;
2. discuss the general manufacturing processes of different garments;
3. state the principles of modelling and know how to produce working flat pattern for garment by draping.

Course Contents

Here the student is encouraged to undertake research, design and construct a collection of designer clothing for celebrities such as film stars, musicians, sportsmen, politicians and business executives. Designer workroom techniques will be emphasised.

FAD 406: Fashion Illustration Portfolio**(2 Units C) (LH 15; PH 45)****Learning Outcomes**

At the end of the course, the student should be able to:

1. describe design elements of form, shape, space and lines on a fashion design;
2. discuss the shape of the face in relation to the neckline of the garment;
3. illustrate various types of garments on a fashion figure; create the style, proportion and construction of a garment;
4. design craftwork for portfolio presentation.

Course Contents

In this course, the student puts together a professional portfolio of illustrations on well-researched themes and subjects, which is an advanced development of *Fashion Sketching and Illustration* achieved at 300 Level. The sketch portfolio is professionally put together illustrating clothing and wears for different purposes (children, youths, adults, male, female, special occasions curtains, bed sheets, pillow cases and the likes).

FAD 408: Conceptual Fashion Design**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, student should be able to:

1. conceive innovative ideas that can be transformed into functional fashion design products;
2. analyze the essence of creative textiles that can bring out fashion design projects that can be useful in society.

Course Contents

In this course, the student experiments with different materials mix media to create fashion designs that challenge conventions and functions. Here, the challenge is to extend our perception of fashion design beyond function to project fashion design as pure art.

FAD 410: Fashion Design: Thesis Project, Exhibition and Modelling (4 Units C: LH 30 PH 90)**Learning Outcomes**

At the end of the course, the student should be able to:

1. transform series of projects executed in the course of product design portfolio as well as the entire programme into a special project that can be presented or displayed in the form of exhibition.

Course Contents

The student, base their Thesis Exhibition Project on a well research field, produce a set of final projects aimed at completing their final year project portfolio to a standard of excellence expected in the practice industry.

Minimum Academic Standards

Equipment

Clothing Equipment/Tools includes the following:

1. Patten Drafting Tables
2. Stools
3. Ironing Boards
4. Dry and Steam irons
5. Varieties of notions (sewing and embroidery threads, zips, buttons, lace, ribbon, appliqués)
6. Fitting room/ cubicle
7. Full length mirror
8. Brown papers
9. Knitting machines
10. Fashion Card Software
11. Hand, treadle, electric and industrial Sewing machines
12. Over locking machines
13. Embroidery machines
14. Electric Cutter
15. Stoning Machines
16. Mannequins
17. Thimbles
18. Tracing wheel
19. Long Rulers
20. French Curves
21. Varieties of Scissors
22. Fabrics
23. Fashion Catalogues

Textile Equipment includes:

1. Vat Dye Stuffs of various colours
2. Chemicals and reagents such as Sodium Hydroxide (Caustic Soda) & Sodium Hydrosulphite
3. Printing inks of various colours
4. Printing machine
5. Digitiser
6. Printing Tables
7. Weaving looms
8. Weaving threads
9. Wax
10. Gloves
11. Stoves

Staffing

Personnel

The personnel requirements for the programme should reflect students' population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Library

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories, Clinics, Workshops And Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10	Studio Space	Students	30
11	Lecture Space	Students	75
12	Seminar Space	Students	30
13	Laboratory Space	Students	30
14	Library	Students	35
15	Social Space	Students	40
16	Storage Space	Students	30

B.A./B.Sc./B.Tech Fine and Applied Arts

Overview

The Bachelor's degree in Fine and Applied Arts programme incorporates theory and practical dimensions while training subscribers. The programme aims to develop in the subscribers perceptual, conceptual, and diverse modes of expression in the visual arts. In this regard, it focuses on inculcating the knowledge of the discipline within the following spheres: essential skills, research competencies and critical thinking to problem-solving strategies. Incorporated in focus also are the acuity towards developing solutions to societal problems that are grounded in the aesthetic dimensions of cultural production and practices, policies, and their institutional frameworks such as museums, galleries, expositions, and various platforms of the art market, including innovative solutions in the crafts/applied arts in the service of the cottage and mainstream industries towards national goals aimed at self-sustainability. The above aim to produce individuals imbued with the wherewithal to respond to the rapid socio-economic and political changes that shape experience in contemporary cultures. Its products are expected to function as professional artists, art educators, art historians, art administrators, cultural officers, art merchants, and artist-managers within Nigeria and elsewhere.

Philosophy

The philosophy of academic training in Fine and Applied Arts (the visual arts) is to develop skills and design acuity in diverse modes of expression while honing competence in the materials and means in the discipline towards a future work experience.

Objectives

The aim of the programme is to grow needed skills and theoretical knowledge in individuals towards engaging professionalism in the visual arts and studio supplementary programmes of art history and art education. The attainment of the above goal considers the following roadmaps:

1. To inculcate skill and requisite theoretical knowledge in individuals in consideration of a life work engagement.
2. To provide a consummate learning environment that enhances practice, the development of skills and competencies in any choice or combination of choices in studio and theory in the visual arts.
3. To bring to consciousness the interrelation between fine art (as a creative expression) that is core to cultural growth and as a catalyst to developments in the humanities, science and technology.
4. To provide theoretical support for studio engagements and outcomes in the studio supplementary disciplines of art history, art education, aesthetics, critical theory, museum, galleries, and curatorial practice thus supporting discursive practices.
5. To develop design thinking and conceptual formulations in ways that will benefit developments in Architecture, Urban Planning and Landscape Design, resource management, and the application of modern technology to design objectives for evident cultural growth in society.
6. To provide interactive platforms where traditional craft skills are intermeshed with modern technological realities to advance the hopes and aspirations of society.

7. To inculcate the need for interaction with other professionals in the allied fields of literary Arts, Industrial and Engineering Design, Architecture, Production Engineering and techniques.

Employability Skills

The Fine and Applied Art programme is entrepreneurial in conception. Its training is geared towards producing professional artists who create wealth through the skills imparted on them in the course of their study. It happens, however, that some aspects of the discipline dovetail into employable careers in the cultural production industries and institutions of learning. In the above regard, the necessary knowledge to cope with the kind of competence required of them is emphasised. This is where the culture of inculcating digital and media art into the curriculum becomes crucial. A new emphasis is drawn to studio supplementary courses that encourage understanding the theoretical suppositions that the programme is hinged on, while encouraging self-expression and ability to present one's self to clients and vendors. In extreme conditions, visual artists have taken up employment in spheres not related to their studies in the university. The skill and competence they display are hinged on the foregrounding and overall philosophy of the university education that trains individuals to become managers of men, means and resources. Summarised specifics include work as:

1. Studio Masters.
2. Products Designers/
3. Design Consultants and Entrepreneurs
4. Personnel in the Ministries and Agencies of Arts and Culture
5. Educators and Researchers in relevant institutions/ industries.
6. Technologists in Material Laboratories.
7. Resource persons in Agencies of Industrial Design.
8. Entrepreneurs of Small, Medium or Large-Scale Industries. Museum and Gallery Directors, Curators, Conservators; and Resource persons in International Organizations such as UNESCO and UNIDO.
9. In-house corporate affairs and media departments of organisations, governmental and non-governmental bodies and institutions.

21st century skills

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Unique features of the programme

1. The feature of the infusion theory, which encourages expressive and rationalising acumen on the recipient of the programme.
2. A comparative location of the development of skills with verbalising on what is achieved or achievable in the studio.

3. The slant that helps the graduate artist represent him/herself before clients and the labour market.

Admission and Graduation Requirements

Admission Requirements

Admission to Fine and Applied Arts Programme can be categorized into the following modes:

Four-year Programme:

UTME: Four-year B.A. degree programme in Fine Arts and Applied Arts and Design: Five O/level Credits in English Language, Fine Arts and crafts or Technical Drawing and any other two subjects or the National Technical Certificate (NTC) in a relevant subject area makes a candidate eligible for admission currently through the Unified Tertiary Matriculation Examinations (UTME). Credit in Fine art, Craft practice, Photography or Dyeing & bleaching is added advantage.

JAMB SUBJECTS: English Language and any other three subjects.

Direct Entry Admission: Three Years B.A. degree Programme in Fine Arts and Applied Arts and Design

Candidates who fulfil the requirements above and who have obtained two (2) Advanced level G.C.E. passes in Art or Fine Arts and any other subject, National Certificate of Education (NCE); in a relevant subject area or National Diploma (ND) may be admitted into the 200 level of the programme.

Waivers and special consideration/other qualifications

Candidates may be required to sit for a practical examination in art and other relevant courses. Candidates with HND (Upper Credit) may be admitted into the 300 Level. This is **only** applicable to five-year programme.

Graduation Requirements

The Fine and Applied Arts programme shall normally be for a minimum of eight (8) and maximum of twelve (12) academic semesters for UTME students, while the direct entry students shall be for minimum of six (6) and maximum of nine (9) academic semesters. One semester will normally be devoted to Student's Industrial Training (SIWES)

Global Course Structure

100 Level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
FAA 111	Basic Drawing I	2	C	-	90
FAA 112	Basic Drawing II	2	C	-	90
FAA 121	Fundamentals of Art and Design I	2	C	-	90
FAA 122	Fundamentals of Art and Design II	2	C	-	90

FAA 131	Introduction to Art Appreciation	2	C	30	-
	Total	14			

200 Level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
FAA 211	Introduction to History of Art I	2	C	30	-
FAA 212	Introduction to History of Art II	2	C	30	-
FAA 221	Life and Still-Life Drawing I	2	C	-	90
FAA 222	Life and Still-Life Drawing II	2	C	-	90
FAA 231	Introduction to Two-Dimensional Art and Design	2	C	-	90
FAA 232	Introduction to Three-Dimensional Art and Design	2	C	-	90
FAA 241	Introduction to Digital Art and Design	2	C	-	90
	Total	18			

300 Level (Painting option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	-	90
FAA 321	Draughtsmanship I	2	C	-	90
FAP 331	Composition in Painting	2	C	-	90
FAP 341	Materials and Techniques in Painting	2	C	-	90
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	29			

400 Level (Painting option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	-	90
FAA 421	Draughtsmanship II	2	C	-	90
FAP 431	Figure and Landscape Painting	2	C	-	90
FAP 441	Genre and Object Painting	2	C	-	90
FAP 451	Mixed-Media Painting	2	C	-	90

FAA 422	Art and Design Management	2	C	30	-
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	-	90
FAA 462	Studio Project Report/Exhibition	6	C	30	135
	Total	24			

300 Level (Sculpture option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	-
FAA 311	African Art History	2	C	-	90
FAA 321	Draughtsmanship	2	C	-	90
FAS 331	Composition in Sculpture	2	C	-	90
FAS 341	Design, Materials and Techniques in Sculpture	2	C	15	45
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	29			

400 Level (Sculpture option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	-	90
FAA 421	Draughtsmanship II	2	C	-	90
FAS 431	The Figure in Sculpture	2	C	-	90
FAS 441	Product Sculpture and Foundry Practice	2	C	15	45
FAS 451	Wood Carving, Constructed, Welded and Assemblage Sculptures,	2	C	15	45
FAA 422	Art and Design Management	2	C	-	90
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship II	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	15	45
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (Media Art option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	-
FAA 311	African Art History	2	C	30	-
FAM 331	Theory and Practice of New Media and Performance Art	2	C	30	-
FAM 332	Acting for Stage and Screen	2	C	15	45
FAV 371	Intermediate Photography and Videography	2	C	15	45
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	29			

400 Level (Media Art option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	-	90
FAA 421	Draughtsmanship II	2	C		90
FAS 441	Video and Installation Art	2	C		90
FAV 472	Photography II	2	C		90
FAP/FAS 462	Painting/Sculpture	2	C		90
FAA 422	Art and Design Management	2	C		90
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	30	90
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (Art History option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	30	-
FAA 321	Art Criticism	2	C	30	-
FAA 341	Art Historiography and Methods	2	C	30	-
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	27			

400 Level (Art History option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art	2	C	30	-
FAA 421	Aesthetics, Art and Design Theories	2	C	30	-
FAA 431	History of African Architecture	2	C	30	-
FAA 451	Draughtsmanship	2	C	-	90
FAA 412	Museum and Curatorial Practice	2	C	30	-
FAA 422	Art and Design Management	2	C	30	-
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship	2	C	-	90
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	22			

300 Level (Arts Education Option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	30	-
FAA 321	Art Criticism	2	C	30	-
FAE 311	Principles and practice of Art Education I	2	C	30	-
FAE 321	Curriculum Development in Art Education	2	C	30	-
	Draughtsmanship	2	C	-	90
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	31			

400 Level (Art Education option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art	2	C	30	-

FAA 421	Aesthetics, Art and Design Theories	2	C	30	-
FAE 411	Principle and Practice of Art Education II	2	C	30	-
FAE 421	Contemporary Trends in Art Education	2	C	30	-
FAE 431	Art Pedagogy in the Primary and Secondary levels	2	C	30	-
FAA 422	Draughtsmanship II	2	C	-	90
FAA 412	Museum and Curatorial Practice	2	C	30	-
FAA 432	The Artist and Society	2	C	30	-
FAE 412	Select Themes in Art Education	2	C	30	-
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (Visual Communications Design; VCD)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	30	-
FAA 321	Draughtsmanship	2	C	-	90
FAV 331	Techniques and Processes in VCD	2	C	-	90
FAV 341	Illustration and Printmaking I OR	2	C	30	-
FAV 351	Intermediate Photography and Videography	2	C	-	90
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	31			

400 Level (Visual Communications Design; VCD)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	30	-
FAA 421	Draughtsmanship II	2	C	-	90
FAV 431	Visual Communications Design II	2	C	-	90
FAV 441	Advertising and Society	2	C	30	-
FAV 452	Illustration and Printmaking II OR	2	C	15	45

FAV 462	Photography II	2	C	-	90
FAA 422	Art and Design Management	2	C	-	90
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	30	90
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (Textile and Fashion Design option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	30	
FAA 311	African Art History	2	C	-	90
FAA 321	Draughtsmanship	2	C		90
FTF 331	Textile and Fashion Design Theory and Processes	2	C	-	90
FTF 341	Printed and Dyed Textiles	2	C		90
FAA 371	Research Methods	2	C	-	90
FAA 311	SIWES Industry Assessment	15	C	-	675
	Total	29			

400 Level (Textiles and Fashion Design option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	-	90
FAA 421	Draughtsmanship II	2	C	-	90
FTF 431	Fashion Design and Clothing	2	C	-	90
FTF 441	Weave on and Constructed Fabrics	2	C	15	45
FTF 451	Textiles and Designing for the environment and Interiors	2	C	15	45
FTF 461	Textile Design and Merchandising	2	C	-	90

FAA 422	Art and Design Management	2	C	-	90
FAA 432	The Artist and Society	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	15	45
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (ceramic design option FCD)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	-	90
FAA 321	Draughtsmanship	2	C	-	90
FCD 331	Theory and Practice of ceramic design Technology	2	C	-	90
FCD 341	Hand-built Ceramic Design	2	C	-	90
FCD 351	Glaze Chemistry	2	C	-	90
FAA 371	Research Methods	2	C	-	90
FAA 311	SIWES	15	C	-	675
	Total	31			

400 Level (ceramic design option)

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	-	135
FAA 421	Draughtsmanship II	2	C	-	90
FCD 431	Industrial ceramic design and Digital Designing	2	C	-	90
FCD 441	Wheel Thrown ceramic design	2	C	15	45
FCD 451	Kiln Design Construction and Firing	2	C	15	45
FAA 422	Art and Design Management	2	C	-	90
FAA 432	The Artist and Society	2	C	-	90
FAA 442	Draughtsmanship	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	15	45
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

300 Level (Metal and Jewellery Design option)

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	30	-
FAA 311	African Art History	2	C	30	-
FMJ 321	Technical Drawing for Product Design	2	C	-	90
FMJ 331	Theory and Practice of Metal smithing and Jewellery Design	2	C	-	90
FMJ 341	Enamelling and Lustre Processes	2	C	15	45
FMJ 351	Foundry Practice	2	C	-	90
FAA 371	Research Methods	2	C	30	-
FAA 311	SIWES	15	C	-	675
	Total	31			

400 Level Fine and Applied Arts - Metal and Jewellery Design

Course Code	Course Title	Units	Status	LH	PH
FAA 411	Contemporary African Art History	2	C	30	-
FMJ 421	History of Metal and Jewellery Design	2	C	30	
FMJ 441	Metal Smithing	2			90
FMJ 451	Jewellery Design	2	C	15	45
FMJ 461	Studio Management and Client Services	2	C	30	-
FAA 422	Art and Design Management	2	C	30	-
FAA 432	The Artist and Society	2	C	30	-
FAA 442	Draughtsmanship	2	C	-	90
FAA 452	Studio Workshop and Practice	2	C	15	45
FAA 462	Studio Project Report/Exhibition	6	C	30	180
	Total	24			

Course Contents and Learning Outcomes

100 Level

FAA 111: Basic Drawing I

(2 Units C: PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. draw figures and objects with precision;
2. comprehensively visualize objects in relation to space;
3. master coordination between the hand and drawing tools;
4. engage the drawing ground with confidence;
5. understand how to compose the pictorial space;
6. appreciate the value of margins in composing the pictorial space;
7. stretch paper on the drawing board; and
8. manage and value individual sketch pads.

Course Contents

This course is an introduction to basic drawing skills. The course aims to sharpen manual skills through exercises that stress the relationship between the drawing tool and the wrist and fingers, the coordination between the hand and the eyes, and the design and placement of objects on paper. Competence is honed through the exploration of analytical and expressive drawing to develop technical, intellectual, and observational skills

FAA 112: Basic Drawing1I

(2 Units C: PH 90)

Learning Outcomes

At the end of this course, students should be able to

1. draw figures and objects with precision;
2. define the dynamics of visualizing objects in relation to space;
3. explain the coordination between the hand and drawing tools;
4. engage the drawing ground with confidence;
5. demonstrate how to compose the pictorial space; and
6. display and keep individual sketch pads.

Course Contents

This course furthers on FAA 121 on the exploration of analytical and expressive drawing of purposively arranged objects, the composition of scenery, perspective rendition, and interpretation, including the bird's eye-view interpretation of tones and shades vis-à-vis points of illumination and the attainment of solidity in the drawn object through a variety of shading mechanisms.

FAA 121: Fundamentals of Art and Design I

(2 Units C: PH 90)

Learning Outcomes

At the end of this course, students should be able to:

1. understand the language of vision as the building blocks of art and design;
2. appreciate the language of vision in the processes of making art and designing;
3. understand the vocabulary, characteristics, physical properties and role of colour in art and design;
4. relate the above to the laws of formal organization or principles of design such as forms of balance, harmony, repetition, variation, unity, economy, proportion;
5. appreciate the language of vision and the laws of formal organization and their derivation from nature;
6. engage design and art practice from the knowledge foundation above; and
7. evaluate and appreciate works of art.

Course Contents

This course introduces basic vocabularies of visual arts, emphasizing elements and principles of design, the nature of colour and colour theories, and the means to visual expression. The aim is to open the dynamics of the creative process and thinking by exploring and developing concepts that rely on various artistic mediums in two- and three-dimensional spheres for specialists and non-specialists alike.

FAA 122: Fundamentals of Art and Design II

(2 Units C: PH 90)

Learning Outcomes

At the end of this course, students should be able to:

1. understand the language of vision or the elements of design in the right sequence, with line in a direction encases shape, space, size, value colour and texture;
2. understand the language of vision as the building blocks of art and design;
3. appreciate the language of vision in the processes of making art and designing;
4. understand the vocabulary, characteristics, physical properties and role of colour in art and design;
5. relate the above to the laws of formal organization or principles of design such as forms of balance, harmony, repetition, variation, unity, economy, proportion;
6. appreciate the language of vision and the laws of formal organization and their derivation from nature;
7. engage design and art practice from the knowledge foundation above; and
8. to faithfully evaluate and appreciate works of art.

Course Contents

The studio and professional practice ethics are an introduction to the nature and content of art and design disciplines. The course provides a hands-on studio experience in visual arts options in two and three-dimensional design. Learning activities incorporate critical and evaluative successions where the students demonstrate how the elements and principles of design function in their respective assignments

FAA 131: Introduction to Art Appreciation

(2 Units; C) (LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. define form in the language of vision and the laws of formal organisation;

2. explain how words relate to the art and design forms;
3. draw verbal analogies on the art and design forms; and
4. demonstrate the art and design forms.

Course Contents

The course develops in the students the theoretical frames for art appreciation. Practical and theoretical approaches focus on developing descriptive capabilities that enliven art as a visual form. Emphasis will be on how the design elements are factored into the art form and relevant laws of formal organization operate in a work of art or design piece. An essential component here is the post description evaluation and judgment arising from the apparent aesthetic value in the work described and evaluated.

GST 111: Communication in English

(2 Units; C) (LH15 PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. explain logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical thinking and reasoning methods (Logic and syllogism, Inductive and deductive argument and reasoning Methods, Analogy, Generalisation and explanations). Ethical considerations, Copyright rules and infringements. Writing activities: (Pre-writing, Writing, Post-writing, Editing and Proof-reading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and Mechanics of writing). Comprehension strategies: (Reading and types of reading, Comprehension skills, 3RSQ). Information and Communication Technology (ICT) in modern language learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units; C) (LH30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;

4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. analyse the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

FAA 211: Introduction to History of Art I

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. understand the history of art as the foundation of other art histories;
2. sketch a relationship among global art histories;
3. understand how art and history define the discipline;
4. appropriate art history as a resource for understanding form in practice;
5. narrate art history from its early beginnings in the caves and rock surfaces;
6. understand art in Egypt at 3000 BC as the model of Greek art;
7. successive developments from Greece Roman art to medieval art in 1300 AD.; and
8. Organise a scrapbook of relevant images and notes on regimes and styles in art history.

Course Contents

An introduction to the conventions of the history of art along with a survey of the significant genres and artists from earliest known artistic engagements in rock art traditions, especially in the Kalahari and Sahara Deserts the Altamira and other European traditions, the art of Egypt, Greece, Rome to the Gothic traditions, and other ancient and medieval traditions of the world focusing on the transitions and formal regimes and styles that the artworks privilege.

FAA 212: Introduction to History of Art II**(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. understand the art of the renaissance as the beginning of modernism;
2. trace the history of modern art therefrom, to baroque, neoclassicism, to later modernism and postmodern traditions;
3. understand art and design as products that define each historical epoch;
4. understand a sketch of modern Nigerian art;
5. appropriate art history as a resource for understanding the problem in practice; and
6. Organise a scrapbook of relevant images and notes on regimes and styles of the period.

Course Contents

An introduction to the history of modern art with the Renaissance regimes in Europe as the starting point and advancing to contemporary modernity in a general survey of world art traditions, within the scope of a survey history.

FAA 221 & FAA 222: Life and Still-Life Drawing I & II**(2 Units C: PH 90)****Learning Outcomes**

At the end of the course, students should be able to:

1. To come to terms with the manual interpretation of the visual form on a medium;
2. To understand the object in its relation to space;
3. To further hone the ways the object is rendered;
4. Represent objects and sceneries with competence and ease;
5. Understand the dynamics of line in rendering forms in three dimensions;
6. Render objects using tones and shades with conviction; and
7. Keep, manage and utilise the sketchpad effectively.

Course Contents

This course is a continuation study in rendering forms as a visual language, emphasizing the definition of the human form concerning the pictorial space exploring various media. It explores a variety of movements in nude and draped figures, immobile objects. Exercises in quick sketches are aimed at honing drawing skills acquired during the duration of the course. Independent projects that explore personal initiatives towards the mastery of form and their historical antecedents, which culminate in a term paper, are integral to the study.

FAA 231: Introduction to Two-Dimensional Art and Design (2 Units; C) (LH 90)**Learning Outcomes**

At the end of the course, students should be able to:

1. To experience core studio practice;
2. Appreciate independent components constituting the arts of two-dimensions;

3. Gain an appreciation of skills peculiar to each;
4. Produce designs and compositions within the studio components; and
5. Discuss their social and cultural values.

Course Contents

This course is a general approach to practice in arts of the two-dimension obtainable in painting, Graphic Arts (incorporating photography and videography), and Textile Design. It is expected that specialists in the studio disciplines will engage the learner introduced to these studio disciplines according to their specialization year.

FAA 232: Introduction to Three-Dimensional Art and Design (2 Units; C) (LH 90)

Learning Outcomes

At the end of the course, students should be able to:

1. To experience core studio practice;
2. Appreciate independent components constituting the arts of three-dimensions;
3. Gain an appreciation of skills peculiar to each course component;
4. Produce objects and compositions within the studio components; and
5. Discuss their social and cultural values.

Course Contents

This course is a general approach to practice in arts of the three-dimension obtainable in Sculpture, Ceramics, Metal and Jewellery Design. It is expected that specialists in the studio disciplines will engage the learner in these studio disciplines under their specialization year.

FAA 231: Introduction to Digital Art and Design (2 Units; C) (LH 90)

Learning Outcomes

At the end of the course, students should be able to:

1. Appreciate the digital tool;
2. To understand, conceptualize and execute concepts with it;
3. Hone application in the use of the tools;
4. Domesticate the relevant soft wares for the execution of art and design challenges; and
5. Mastery of the digital device and space as artists and designers.

Course Contents

The course is an introduction to digital imaging for creative practice. It seeks to offer a well-rounded background in the history and craft of digital art and design. It presents the students with avenues for exploring the medium for visual rendering across specializations in the visual arts. The course offers essential computing and studio exploratory experience on the digital medium to provide artistic self-expression and concept transformation in two- and three-dimensional art and design rendering. Students must learn rudimentary and advanced techniques in vector and bitmap-based applications that will engender professional growth. Related software used in manipulating form across specializations in the visual arts is introduced, exploring software such as Adobe Photoshop and Adobe Illustrator.

GST 212. Philosophy, logic and human existence (2 Units; C) (LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211 – Entrepreneurship and Innovation (2 Units; C) (LH 15 PH45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation,

Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

GST 312- Peace and Conflict Resolution

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; ZangoKartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units; C) (LH 15 PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;

3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

300 Level Painting

FAP 331- Composition in Painting

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. Hone the theory of practice and the practice of theory in the studio discipline.
2. Expansion of the creative possibilities contra traditional modes of visual expressions
3. Engage digital painting and composition
4. Come to terms with the ways of the masters of the discipline
5. Stretch and prime the canvas,
6. Prepare other painting grounds
7. Prepare pigments and binders
8. Engage studio theorising
9. Write critical and analytical positions on products of the studio painting

Course Contents

The course is a hands-on approach to thinking with colours in its multiple and multiform schemes and the dynamics of the pictorial space relying on objective and non-objective frames of reference. The course, at once, incorporates visual analysis of paintings from different epochs, regimes, and traditions. It provides students with a history of styles to develop a personal approach to formal organization and rendition. The course also incorporates exercises in new media art, video art, and video installation. Assignments are based on digitally realized models using knowledge gained from FAA 231 and 232. Term papers are expected to demonstrate how theory and practice complement one another in the studio with written work stating accomplishments that the student has attained using the conventional and digital platforms.

FAA 341 Materials and Techniques in Painting

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. Engage with the tools and equipment of the discipline;
2. Prepare grounds for executing works;
3. Discuss theories in relation to practice;
4. Understand historical trends in the discipline and associated personalities or epochs;
5. understand the chemistry of pigments and personal safety;
6. appreciate studio work ethics personal ethics and organisation;
7. understand safety conducts;
8. Engage issues in environmental ethics and sustainable practice;

9. Appreciate the frame and borders in compositions;
10. Engage borders and frames where necessary; and
11. Understand the value of presentation of a finished work.

Course Contents

The course is a study of materials used in painting, especially pigments and grounds, oil-based media, and the synthetic medium, including their chemical properties, safety conditions, and prevalent studio techniques in painting and outcomes. To this end, it draws on the history and understanding of painting as a craft over time. Aesthetics and theory of painting engaged are expected to provide students with philosophical thoughts. However, time regimes inform practice and individual and collective identities. The course also dwells on development in interactive digital art, mainly but not limited to conceptual videos, postmodernism, and the new spectacle.

FAA 371: Research Methods

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. Understand the guide to research schedules;
2. Understand various research designs, such as qualitative and quantitative options;
3. Undertake field investigations and research;
4. Construct questioners for qualitative empirical or open-ended research options;
5. Engage annotations on relevant research undertaking and texts;
6. Apply various research citations like the MLA, APA, Notation styles;
7. engage research guides to studio and studio supplementary disciplines;
8. Report research logically and systematically; and
9. Compile bibliography; work cited, references, footnotes and endnotes.

Course Contents

The course is grounded on the tenets of qualitative research design, although quantitative approaches may be accommodated. Theory and methodologies required for the interpretation and presentation of reports are incorporated. The course provides guidelines to field research techniques, documentation, and reporting of studio engagements through systematic research and experiential or field data appropriation. It focuses on the nature and values of primary and secondary research materials, their place in the analytical processes in-studio and studio supplementary disciplines, the relationship between a theme for research and thesis to be explored, methods of approach to bibliographic research presentation of research reports. The location of sources (searching the index and databases in electronic and non-electronic sources), compiling end/footnotes, references, works cited, and general bibliography is considered pertinent.

FAA 310, FAA311, FAA312: SIWES**(15 Units; C; PH 675)****Learning Outcomes**

At the end of the course, students should be able to:

1. Students gain insight into their identity as future studio masters; and
2. Understand the practical dimensions and organisation of their trade

Course Contents

The course is a practical work experience that aims to relate studio theory and practice to the industry. It obtains for six months, at which time a student is attached to an industry/artist/institution to work under an experienced professional/atelier/institutional setting. At the end of the course, a bound report on the nature of work engagement(s) during the period. The experience acquired shall be presented in a written statement in a group seminar and evaluated.

400 Level Painting**FAA 431 Figure and Landscape Painting****(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. Interpretation of form and scenery in painting;
2. Demonstrate comprehensive understanding in visual rendition;
3. Understanding design in nature and the creative appropriation of space; and
4. Render figures and sceneries in space.

Course Contents

This studio course aims to provide an exhaustive understanding of form, moods, and composure in the human figure, the object of nature, natural and manufactured environment. Lecture time involves studying models in various poses or themes aimed at entrenching the interpretation of form and moods and composure in portraits, single and multi-figural themes. The way drapery defines form is also to be embedded in the learner. Lecture time involves studying models in various poses to entrench a mastery of form in portraits, single and multi-figural themes.

FAP 441 Genre, Object Painting**(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. Engage creative possibilities;
2. Extrapolate on possible creative realities;
3. Query the limits of the possible inactivity;
4. See and search for alternatives to traditional modes of visual expressions; and
5. Use the digital design interface with mastery.

FAA 421 Art and Design Management**(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. Exhibit relevant managerial skills in the discipline;
2. Engage the managing of self or other artists;
3. Understand the conventions of being managed;
4. Understand the dynamics of the commoditization of the artwork;
5. Design and execute a studio working space;
6. the art of soliciting for commissions and presentation of self to clients;
7. The art of proposal writing;
8. Design personal CV; and
9. Present oneself in art and design bidding processes.

Course Contents

This course introduces students to the issues of corporate and small business management for artists and designers. The process of setting fees on commissioned work and other artistic products and the legalities of creative and design practice with particular regard to the laws of libel, copyright, plagiarism, contractual agreements/transactions, and protective rights will be broached. The institutions of the art world and how they function within the commoditization value of the work of art is also core to the course

FAA 422 The Artist and Society**(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. The theoretical underpinning governing art and the artist in society;
2. Operate from informed background of sociological theories of art and society;
3. Anticipate coping with work experience engaging society in their vocation; and
4. Understand the theoretical suppositions that relate art and design to society.

Course Contents

This course examines such topics as the conceptual framing of art and the artist through the ages how the artist impinges on the society and the ethos of his milieu. The place of the artistic experience, grounds or errors in projecting the creative mystique upon reality in the conception of the artistic personality, investigating the place of artistic inspiration considering the common saying that the artist gives back to the society what the society created. It accommodates the platonic argument and psycho sensory rationalizations of Sigmund Freud Karl Jung and the place of the artistic metaphor and its origin in the socialization of Jacques Lacan and Pierre Bourdieu's theory of art within the frames of habitus, cultural and symbolic capital.

FAA 423 Workshop Seminar**(2 Units; C) (LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. hone self-direction in the profession;
2. gain and anticipate self-direction in undertaking projects; and

3. manage studio hands and assistants.

Course Contents

The course provides an opportunity for a programme of self-directed work in the studio discipline of each graduating student. Students engage in a quasi-project of their choice defined in a formal proposal to be appraised by a constituted body and approved. Display of work-in-progress by weekly shall be critiqued by peers and the lecturers in the studio discipline. A work of promise will be passed for further improvement preparatory to a public display. Assessment of students will be based on individual input to his/her work. Where the lecturers are not satisfied with the degree and quality of the student's work, the student shall be assigned another project of reasonable scope upon which his/her ability can be further judged.

FAA 452 Studio Project Report/Exhibition

Learning Outcomes

At the end of the course, students should be able to:

A project work of art for display on a chosen site in any of the Fine Art and Design specialist areas under the guidance of a supervisor. The student is expected to submit an essay on such work of between 1,500-3,000 words, including bibliographic references or works cited. Pertinent to the documentation include stating a particular problem the design addresses, the design concept and mode of execution, choice of form, and antecedents in history.

300 LEVEL SCULPTURE

FAA 331 Composition in Sculpture

(2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. Hone the theory of practice and the practice of theory in the studio discipline;
2. Expansion of the creative possibilities' contra traditional modes of visual expressions;
3. Come to terms with the ways of the masters of the discipline;
4. Representation without imitation;
5. Engaging the negative and positive space in composition;
6. Understand various types of relief sculpture and spatial needs and values;
7. Engage studio theorising;
8. Hone the use of the digital tool for sculpture;
9. The relevance of mounting finished works;
10. The status of the pedestal;
11. Sculpture in relation to space;
12. Sculpture in relation to craft; and
13. Discuss masters in the history of sculpture and their conventions and contributions.

Course Contents

The course is a hands-on approach to thinking with materials in the organization of form in relief and the round, relying on the objective and non-objective world as schemata. The course incorporates visual analysis of sculptures from different epochs and traditions with the sole aim

of providing students with a history of styles on which they will develop a personal approach to formal organization and rendition. Assignments are connected to specific sculptural materials such as metals and alloys, fabrics, and plastics in their variety of finishing/transfer options. The course also incorporates exercises in new media and video installation art and performance. Assignments are based on digitally realized art through applications of knowledge gained from FAA 231 and 232. Term papers are expected to demonstrate how theory and practice complement one another in the studio with written work stating accomplishments that the student has attained using the conventional and digital platforms.

FAS 341 Designs, Materials and Techniques in Sculpture (2 Units;C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. understand the elements of the three-dimensional order;
2. understand the principles of the three-dimensional order;
3. approaches to sculpture;
4. sculpture in relation to space;
5. sculpture in relation to craft;
6. truth to material dialectics;
7. the sensory and structural properties of materials;
8. understand the tools of the discipline;
9. appreciate studio work ethics personal ethics and organisation;
10. understand safety conducts; and
11. practice environmental ethics.

Course Contents

The course is a survey history of sculpture. It provides a forum for understanding the nature of design by analysing the language of form in sculpture and its laws of formal organization. The course provides detailed knowledge on sculptural materials, including their chemical properties, safety conditions of their use, their potentials and adaptation to the sculptural medium, and the "truth to material" debate, the new media platform, and its vast possibilities ethics of practice and studio professionalism.

400 Level Sculpture

FAS431 The Figure in Sculpture (2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. visual interpretation of life forms in two and three-dimensional forms;
2. demonstrate a comprehensive understanding of the human anatomy;
3. understanding design in nature and their creative appropriation of space;
4. appreciate the human figure as the epitome of form;
5. understand form as a mode of design;
6. exaggerate the natural form; and
7. distort the natural form.

Course Contents

The course provides an in-depth understanding of human anatomy and other life forms. Lecture time involves a study of models in various poses aimed at entrenching a mastery of form. Such sculptural concerns as portraits, total figures, torsos, expressive gestures in hands and limbs, single and multi-figural themes shall be explored to yield various personal experiences. This course would include collective critical evaluations that involve the students and the course director to hone professionalism through shared experience.

FAS441 Product Sculpture and Foundry Practice (2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. an entrenches the knowledge of sculpture beyond the needs of fine art;
2. sculpture and the technical process;
3. use the throwing wheel;
4. manipulate and realise forms with the lathe machine;
5. an understanding of sculpture that functions as a craft in human industry; and
6. engaging metal casting and direct same.

Course Contents

The course bridges the concepts of sculpture as art and as a craft. It appropriates the sculptural processes of carving, modelling throwing and assemblage to lathe-machined pieces in wood, plastics, and metals. An introduction to the course shall engage skills in technical drawing. Assignments focus on rudimentary practices in conceptualizing, sketching models, computer simulation of models leading to product development and execution. Included is foundry practice involving the mechanics of the furnace and melting techniques, equipment and tools for ferrous and non-ferrous metal casting and principles of modelled cast products. Studio practice focuses on industrial metal casting processes, emphasizing shell mould and investment mould casting, sand casting, cores, core prints, core boxes, moulds; i.e. sand moulding; green/damp moulds, skin dry moulds, and skin dry moulds.

FAS 451 Wood Carving, Constructed, Welded and Assemblage Sculpture (2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. master the art of carving;
2. execute compositions in wood;
3. weld metals and alloys using the arc and gas welding;
4. brace metal surfaces;
5. explore other forms of bonding; and
6. realise three-dimensional forms in any option above or their combination.

Course Contents

The course explores carving as a process of sculpture in the round and relief as a hands-on approach. Types of available wood in the tropical forest and finishing and preservation techniques are introduced to the students. Sculpture in relation to wood and metals and various

approaches to bonding and welding techniques and bracing surfaces using oxygen and acetylene and arc welding. It further explores the complex processes of mixed media compositions, modelling and assemblage. Assignments cover sculpture in the round and relief sculptures, wood assemblages and possible binding techniques. The course incorporates the theory and characteristics of wood, metals such as iron, brass, copper, and alloys, led, tin, and ready-mades as part of the theory of the course.

New Media Art 300

FAN 331 Theory and Practice of New Media and Performance Art (2 Units; C) (LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. understand the nature of the new media;
2. appreciate its theoretical foregrounding;
3. thematic on its peculiarities; and
4. engage practice in the genre.

Course Contents

The fatigue that modernist artists expressed about the conventions in painting and sculpture and incorporating ready-mades and genre objects within the art field forms the background to this course. From its postmodern perspective, the course evaluates the new media from the multimedia context. It evaluates the interactive contexts in which the new media are appropriated in the visual arts. It thermalizes performance-driven genres such as the performance art in multimedia and studio performances - the gallery/studio informal/stage - conceptual trends and the spectacle they endear. Studio assignments feature texts for performance on personal narratives, memories, collective histories, and enactments in video documentations of not more than three minutes.

400 LEVEL NEW MEDIA ART

FAN 441 Video and Installation Art

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. master the video camera or the phone camera;
2. make short videos;
3. edit videos;
4. present short video frames;
5. relate videos with installations;
6. engage the pragmatics of installation art; and
7. engage video installations and art.

Course Contents

The course is a combination of theory and practice. It evaluates the two primary varieties: single-channel and installation that characterize video art, i.e., single-channel works, where a video is screened, projected, or shown as a single series of images, and installations which comprise either an environment made up of several distinct pieces of video screened simultaneously, or a combination of video with assemblage, or performance art and the

multimedia fashion for combining architecture, design, sculpture, electronic and digital art. The course also considers using the Internet and computer art to manipulate photographic and film imagery. The course also engages installation art and its unique configuration of large-scale, mixed-media constructions, which are often site-specific and temporary while exploring the conceptual use of space and its flexible tri-dimensionality. Its contemporary history within the multimedia frame is also brought into context. Two term papers that come in the format of a review paper are encouraged. Assignments consider the potentials and explorative potentials of the video in multimedia manipulations. Assignments are self-directed but approved for exploration and execution. All assignments digitized form part of a student's portfolio.

FAA 311: African Art History

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand African art history;
2. its relevance to cultural production;
3. symbolic icons of the African art world;
4. explore its iconographies;
5. interpret forms in African art;
6. appreciate form in African art;
7. master its historical timelines;
8. compare its historical timeline with the options of anthropology; and
9. develop a scrapbook for relevant artworks and notes on the period.

Course Contents

A chronological survey of art in Africa beginning with the rock art traditions in Southern Africa dated 70,000 BC typified among others in the Blombos Stone to the Saharan frescos in North Africa, the art of pharaonic Egypt and ancillary traditions of Nubians (Kushite kingdom), Meroe and Axium, Bantu and Sudanese kingdoms and city-states in Africa south of the Sahara to 1,700 AD. The focus shall be on the stylistic progression of forms, symbolism, and the social value of works as metaphors that bear pan-continental identities.

FAA 351- Art Historiography and Methods

(2 Units; C) (LH 30)

Learning Outcomes:

1. understand the origins of the discipline of the history of art;
2. acquire the knowledge of its principal scholars and their contributions to the discipline;
3. understand the shifts in its methodological and theoretical timelines;
4. understand contemporary trends in the discipline; and
5. understand the subjective and theoretical dimensions of the practice of art history through the ages.

Course Contents

The course introduces majors in art history to the history and methods of the discipline. It surveys the approach and methods adopted by Giorgio Vasari's *Life of the Artists* and its artistic biography approach. Johan Joachim Winkelmann, Jacob Burckhardt among others are explored. Topics such

as determination of periods, stylistics and atelier attribution and provenance studies, the primitive and the progressive chronology applied to African art history constitute the core of this course.

FAA 341 Art Criticism

(2 Units;C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the locus of art appreciation and criticism;
2. master the methodological tools;
3. acquire descriptive capability;
4. effectively employ iconography and iconology/semiotics or contextual reading;
5. engage critical writing in the artwork; and
6. engage exhibition and display reviews.

Course Contents

The course sets out to provide the methods of evaluating art as a configuration of form. These include descriptive and analytical procedures that aid the definition of style/stylistics and meaning making in the art object. The course accommodates foundational knowledge in such theoretical and methodological conventions as formalism, iconography and iconology, semiotics, critical theory, and deconstruction.

400 LEVEL COURSES NEW MEDIA ART

FAA 411: Contemporary African Art

(2 Units, C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand contemporary African art history;
2. its relevance to cultural production;
3. symbolic icons of the contemporary African art world;
4. explore its iconographies;
5. interpret forms in contemporary African art ;
6. appreciate form in contemporary African art ;
7. master its historical timelines with emphasis on artists who shaped ideas in contemporary African art; and
8. understand the ways of art history contra visual culture.

Course Contents

The course is a survey of the beginnings of modern art in Africa. It evaluates chronological developments in the evolution of artistic styles and forms from the mid-nineteenth century to the present on a pan-continental scale. It will also promote Diaspora traditions of modernism. Responses by artists to the pull of Western European-inspired modernism and indigenous or other options open to the artist in contemporary cultural contexts will be examined.

FAA 421 Aesthetics, Art and Design Theory

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the relationship between philosophy of art and aesthetics;
2. the origin of the aesthetic discourses in the Philosophy of art;
3. define aesthetics and understand its workings around perception;
4. understand how aesthetic theory through time shape the epochs Discuss scholars; and their contribution to the development of aesthetics; and
5. contemporary global aesthetics and the postcolonial ferment and African art and aesthetics.

Course Contents

The course is a survey history of the notions that govern art as an idea and its response as a product of culture regarding taste in the philosophy of art and aesthetics. The focus will be on the thoughts of Plato on art as false imitation, to the theory of imitation of Aristotle, the idealism of the medieval thoughts and the speculative idealism of Immanuel Kant and the formalist ethic, the new art and crafts movement rooted in the Western traditions of scholarship and contemporary aesthetic realities and reception and the concept and an idea in African cultures especially its conceptual foundations in idealism.

FAA 431 History of African Architecture

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. African architecture as a built form;
2. acknowledge its styles and forms; and
3. understand its relationship to spatial ecology and their difference of form arising there from.

Course Contents

The study of manifestations of the built form as shells for human activities in Africa. The course figures out how the environment and ecology shaped their forms, including the taxonomy they exhibit. For example, the paranoiac architectural traditions, the Great Walls of Zimbabwe, the royal architectures of the Ashanti, Benin, the Yoruba Kingdoms, and their impluvium and compluvium configurations, the advent of hybrid styles like Afro-Brazilian architecture, and other style fusions. The discussed objects include domestic and non-domestic architecture and other elements of the material culture that support the built form. Particular attention will be paid to how these objects functioned within such settings.

FAA 321: Draughtsmanship I

(2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. to come to terms with the skill of interpreting art;
2. appreciate the visual form as cultural objects;
3. to identify with their definition as objects of value in society and;
4. come to terms with the process of their creation or the way they are rendered; and

5. keep and develop content on a sketchpad.

Course Contents

This course is a continuation in rendering forms as a visual language, emphasizing a more profound mastery of form and conceptual issues that arise from objective and non-objective contexts of reference. Class sessions focus on projects that encourage the exploration of general conventions towards developing personal initiatives in the rendition of forms in multimedia approaches.

FAA 451: and FAA 442: Draughtsmanship

(2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. to come to terms with the skill of interpreting art;
2. appreciate the visual form as cultural objects;
3. to identify with their definition as objects of value in society; and
4. come to terms with the process of their creation or the way they are rendered.

Course Contents

This course is a continuation in the rendering of forms as a visual language with emphasis on individual students developing personal approaches to the rendition of forms and developing an aptitude towards analyzing conceptual issues that arise from the form as rendered. Class sessions focus on projects that encourage exploring known conventions towards developing personal initiatives in the rendition of forms.

300 Level Art Education

FAE 311 Principles and practice of Art in Education I

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the philosophical foundations of art education;
2. locate the value of art teaching in a culture;
3. understand the contribution of philosophers of art education; and
4. understand the guiding principles of art education.

Course Contents

This course appertains to philosophical concepts in Art Education, included are frontiers of experimentalist philosophy in education, pragmatic approach to learning, experience and nature, as seen in the thoughts of John Dewey and his followers, Marion Richardson concept of aesthetic education of the child and the place of art in the general education of the child, Gestalt theory of perception and general perception theories, Viktor Lowenfeld's theory of art as process counterpointed by art education for art production and other art education concepts concerning art and democracy of thought and experience.

FAE 321 Curriculum Development in Art in Education (2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. underlying principles of curriculum development;
2. the core need of a curriculum;
3. from curriculum to evaluation; and
4. the ramifications of teacher accountability.

Course Contents

This course acquaints the student with in-depth knowledge of curriculum studies ranging from educational theories to philosophical, psychological, and sociological issues. Also, it is expected to expose the learner to theories and traditions and changes in curriculum. The course also aims at acquainting students with an in-depth knowledge of evaluation and assessment of the curriculum and the teacher accountability and control

FAE 312 Principles and Practice of Art in Education II (2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the philosophical foundations of art education;
2. locate the value of art teaching in a culture;
3. understand the contribution of philosophers of art education; and
4. understand the guiding principles of art education.

Course Contents

The course is a continuation of FAE 311 focusing on the factors that human development in art, typologies of creative behaviours in the child, the core of the aesthetic method of education, evaluations of the product and process of art, its pedagogy, the innovative product as a cultural imperative, assessment evaluating art in a learning process and as a product of culture and the value of art in contemporary - Nigerian society.

FAE 322 Sociology of Art Education (2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the structure of society at the theoretical sphere;
2. locate the value of art to society;
3. understand the contribution of sociologists to the structure of society; and
4. understand the guiding principles of social order that encourages art appreciation.

Course Contents

This course focuses on the interface between society and the product of art. How art serves the needs of society and the aesthetic dimensions of art, the democracy of art, the role of art in the education process, art and the ethics of living art as a product of culture, art and meaning in society Issues of culture and art education; examination of various forms of art as representations

of knowledge, belief and Pierre Bourdieu's concept of habitus, art as symbolic and cultural capital. Epistemology, the meaning of function, and the conceptual location of visual culture in society.

FAE 332 Teaching Practice

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. engage practice in art pedagogy and future engagements;
2. locate the value of art teaching; and
3. experience hands-on pragmatics.

Course Contents

Exposure of student-teachers to a real-life teaching-learning situation in our primary and junior and senior secondary schools with the view to concretizing their theoretical art methodological knowledge and skills already acquired. It is a supervised teaching practice organized within the department for the second semester at the 300 level.

Art Education 400 Level

FAE 411 Contemporary Trends in Art Education

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the philosophical foundations of art education;
2. locate the value of art teaching in a culture;
3. understand the contribution of philosophers of art education; and
4. understand the guiding principles of art education.

Course Contents

The course focuses on the postmodern conditions of art education and its relationships to the influences of visual culture in the 21st century. Issues concerning the value and importance of visual imagery, influence of computer networking, mass communication and other image sources in the era of globalization.

FAE 421 Art Pedagogy in the Primary and Secondary levels (2 Units;C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the peculiarities of various grades and levels of students;
2. articulate and foresee the needs of these grades of students;
3. understand the capability of the students at their levels; and
4. understand the guiding principles of art education.

Course Contents

This course provides the conceptual frame of art in general education, calling attention to the location of art within the overall aim of educating the child. Studies in the artistic abilities of children, typologies of creative achievements concerning age and social class complex, from the

age of scribbling to the age of artistic awareness, evaluating child art, strategies for building confidence artistic attainment in the child in critical practice and perception, understanding the workings of the art curricular for child pedagogy.

FAE 412 Select Themes in Art Education

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explore the challenges in art education;
2. theorise challenges of art education;
3. understand the contribution of philosophers of art education; and
4. understand the guiding principles of art education.

Course Contents

The course intends to expose students to art problems in general by selecting topics in the field that will require the use of previous knowledge. How should performance in art be evaluated? How researchable is the art product? Does art teaching need theory? What factors can influence societal development in art? How does society benefit from the artist and the connoisseur, among other themes?

300 Level Visual Communication

FVD 331 Techniques and Processes in Visual Communications Design (VCD)

(2 Units, C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the theory and practice of the subject;
2. understand the digital tool as its cultural foregrounding;
3. appreciate the complex nature of the discipline; and
4. understand critical developments in the subject.

Course Contents

This course shall review a survey of basic terminologies, techniques, characteristics and processes as relevant to the graphic production as introduced in FAA 233.2, namely, the letterpress, the offset lithographic press, the gravure press, the process camera, and scanners for multiple colour print reproduction, and the digital desktop publishing interface as an independent publishing device vis-à-vis other contemporary product development. It shall, in addition, seek to develop basic skills in typography by exploring possibilities in hand lettering leading to digital type constructions. Basic print finishing techniques, ink, and paper specifications shall also be covered. Students offering this course shall essentially learn how to bring visual ideas to reality through the varied processes of multiple image-making through experimentations at the university press to enrich students' experiences further.

FVD 351 Illustration and Printmaking**(2 Units; C) (LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. engage the processes of illustration and printmaking;
2. explore innovative engagements; and
3. situate processes for a variety of visual communications contexts.

Course Contents

This course seeks to provide a studio exploratory experience on diverse illustration media for artistic self-expression and the printmaking medium. Relief and reduction, dry point and etching, screen printing techniques, lithography, and photographic processes shall constitute the core focus for the provision of competence in artistic self-expression. Students are made to learn techniques conducive to artistic growth, which is coupled with a sound, well-rounded background in the concepts, history, and craft of printmaking. Assignments stress the specificity of the medium, while regarding illustration studio assignments will range from illustrating the industry's product, educational/social awareness campaigns to the generation of imagery for texts.

FVD 335 Intermediate Photography**(2 Units; C) (LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. engage the processes of shooting with the camera;
2. engage the process of video recording; and
3. engage the processes of the camera and video editing processes.

Course Contents

This course is designed to provide knowledge and practical skills that enhance students' ability to master photographic equipment for multimedia practices that include videography, photo techniques, and materials. Exercises include studies and exploration of outdoor and indoor photographic compositions, emphasizing how the photographic lens relates with light and how the light frames the outcome of the camera, light metering and speed shutters, the phone camera, and the new digital media innovations. Assignments include outdoor and indoor shots and one-minute video and editing.

400 LEVEL Visual Communications**FVD 431 Visual Communications Design II****(2 Units C: PH 45)****Learning Outcomes:**

At the end of the course, students should be able to:

1. understand the theory and practice of the subject;
2. understand the digital tool as its cultural foregrounding;
3. appreciate the complex nature of the discipline; and
4. understand key developments in the subject.

Course Contents

This course seeks to develop advanced ability in conceptual thinking for solving graphic design problems. The course also seeks to harmonize the skills learnt in concept development, critical thinking for graphic design projects and channel it through a coordinated design system. Projects are designed to aid students in demonstrating the ability to build their imagination, aesthetic sensitivity, and powers of critical thought required to succeed as visual communicators. A unique sequentially-based approach will stress image development, typography, print, screen-based graphics, and interactive design applications. Students are offered the latitude to learn current best practices and conventions in UI/UX design and apply them to create compelling screen-based experiences for websites or apps to expose them to various careers, from marketing to web design human-computer interaction.

FVD 441 Advertising and Society

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. students gain insight into the sociology of advertising;
2. understand relationships between the designer and society;
3. the impact of design on society;
4. the necessity of advertising; and
5. the bore and scam of advertising.

Course Contents

This course is designed to explore multiple theoretical approaches to the study of advertising and the digital media vis-à-vis the dynamics of an ever-changing visual ecology. Chosen texts will be developed to examine the messages' cultural reflections, nature, and characteristics. Students will initially be required to develop an image bank and an in-depth bibliography of critical texts addressing the construction of visual imagery within a defined period of time and/or location.

FVD 451 Illustration and Printmaking II

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. engage the processes of illustration and printmaking;
2. explore innovative engagements in its;
3. situate processes for a variety of visual communications contexts; and
4. engage innovative and experimental processes in printmaking.

Course Contents

This course is a continuation of Printmaking FAC 341 and seeks to provide fluency and confidence in manipulating the various illustration and printmaking media explored in the first specializing year. Studio explorations will include experiments in multicolour prints in the various media broached. Emerging Options and possibilities in digital image making and manipulation for a variety of expressive imagery shall be undertaken.

FVD 462 Photography II**(2 Units C: PH 45)****Learning Outcomes:**

At the end of the course, students should be able to:

1. engage the processes of snapshots in at least two particular areas;
2. explore innovative engagements in the chosen specialties; and
3. master the craft of editing.

Course Contents

This course is a hands-on approach to photography, and recipients are introduced to the following aspects of photography. In contrast, the recipient is expected to engage not more than three specializations from any of the following Documentary photography, Portrait Photography, Fashion Photography, Advertising and Still Life Photography, Photojournalism, Wedding Photography, Glamour and Nude Photography, Copying, Macro Photography, and Photo microscopy or videography and short film narratives and editing.

FTF 331 Textile and Fashion Design Theory and Processes (2 Units C: PH 90)**Learning Outcomes:**

At the end of the course, students should be able to:

1. understand the fabric for its multiple values;
2. appreciate the use of fabric for various needs;
3. identify career opportunities in the trade; and
4. offers insight into fabrics and design, and sustainable practice.

Course Contents

The course focuses on the history, theory, and practice of designing, emphasizing natural fabrics and their use in clothing and fashion and environmental and general industrial applications through time. Assignments will identify natural and manufactured fabrics, pattern making, colour and pigment application, materials, and equipment used in the industry.

FTF341 Printed and Dyed Textiles**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. develop the aesthetic dimensions of designing;
2. handle chemicals for dyeing; and
3. practice sustainable designing about the fabric.

Course Contents

Detailed analysis of fabric structure and printing and dye pigments and end-use with reference to consumer safety and market values. Practical studio work is designed to aid students in exploring ways of improving fabric prints' commercial and aesthetic values.

FTF 431 Fashion Design and Clothing**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. understand pattern-drafting in relation to the human frame;

FTF 471 Textile Design and Merchandising**(2 Units; C) (30LH)****Learning Outcomes:**

At the end of the course, students should be able to:

1. grounded in the commercial values of textile design;
2. strategies of exposition of fabric value;
3. know the strategies of packaging the self; and
4. the antics in business and the textile environment.

Course Contents

Commercial survey of designs and fabrics for fashion and interior and exterior design and decoration. Principles and structure of the textile market, clothing for future needs, fabrics as communication, and their need for various settings and the environment. The course incorporates respective aspects of planning, purchasing, allocation, and promotion of the merchandise of fabrics. The communicative and critical applications for achieving results in the textiles industries involving merchandising, consultancy and advocacy, come into focus.

FCD 331 Theory and Practice of ceramic design and Technology (2 Units, C) (PH 90)**Learning Outcomes:**

At the end of the course, students should be able to:

1. understand the technologies of working clay;
2. know the preparation and blending of ceramic bodies, including raw materials;
3. characterization of raw materials;
4. measurement of properties; and
5. green body preparation, drying, and firing.

Course Contents

The course is designed to provide knowledge on different kinds of clay and their characteristics concerning their chemical composition, physical and working properties. Plastic and non-plastic ceramic materials, quartz invasion, thermal expansion, and shock. Clay formulation and bending – line and triaxial blending in clay. Reasons for formulating and blending the clay bodies. Englobe, glaze, and their composition with silica. Various types of glaze, their chemical compositions, and make—materials for ceramic and their characteristics concerning their chemical composition, physical, mechanical, and thermal properties.

FCD 341 Hand-Built ceramic design I**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. Understand basic creative skills and forming techniques in ceramic design
2. Effective utilisation of the manual mechanism.

Course Contents

Execution of ceramic works from sketches using the hand-built ceramics techniques such as pinch, coil, slab, and press mould and acquiring the basic skills in modelling forms and decorations on wares using lines, texture and colour. Advance assignments explore working on composite forms, mosaics, collage, techniques of brick making, tiles, sanitary and architectural wares, lamp base and shades.

FCD 351: Glaze Chemistry

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. knowledge about clay bodies' physical and mechanical properties in their natural and fired states;
2. understand the preparation and blending of ceramic bodies, including raw materials;
3. characterization of raw materials, measurement of properties;
4. green body preparation, drying & firing, including glass.

Course Contents

The course focuses on glaze technologies. These include understanding the physical and chemical properties of materials such as Feldspar, Quartz, Kaolin, Whiting, Salt and Lead glazes. The oxides and their functions in glazes. Other materials from antimony oxide to zirconium oxide in glaze development. Glaze by recipe and formula. Low and high-temperature glazes. Local materials for glaze production. Glaze defects and remedies. Conditions before and during glaze application and glazing techniques. Glass blowing continues from simple forms to larger forms. Production of figurines, vases, trophies, bowls and the likes. Finishing of pieces and presentation. Ring.

FCD 431 Industrial Ceramic and Digital Designing

(2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. comprehend the preparation and blending of ceramic bodies;
2. designate the devices of characterising ceramic design materials;
3. understand how to calculate the physical and mechanical properties of ceramic design; materials such as water absorption, true density, bulk density and Modulus of Rupture, using appropriate formulae;
4. comprehend drying & firing processes; and
5. understand the relationship between the studio and industrial ceramic design techniques and forms.

Course Contents

The course is hinged on the application of the digital platform in the design of ceramic essentially. Conceptualization of three-dimensional ceramic forms through freehand to the use of software packages to develop the sketches into three-dimensional forms. The course enables students to use the digital tool in interpreting their works in three dimensions. Sketches will be transferred to 3-Dimensional digital modelling skills and 3D animation techniques, introductory learning about contemporary 3-D design modelling and animation will also be

FCD441 Wheel-Thrown Ceramic Design**(2 Units C: PH 45)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate advanced creative skills and forming techniques in ceramic design;
2. be confident with the machine tool of the potter's wheel;
3. convincingly execute and design household and decorative ceramic wares; and
4. master symmetry and proportional relationships.

Course Contents

Preparing a clay body for throwing, starting with cones, cylinders, and open bowls. Various shapes and designs are explored on the wheel. General handling of wares on the wheel-head such as centring, pulling, trimming, cutting, or removing ware from the wheel-head and turning the leather-hard ware to create the foot, reducing weight and creating the rings.

FCD 451 Kiln Design, Construction and Firing**(2 Units C: PH 45)****Learning Outcomes:**

At the end of the course, students should be able to:

1. understand refractory bodies;
2. classify different types of kiln and furnaces;
3. competence in Kiln Design; and
4. describe fuels and energy utilisation in the ceramic and glass industries.

Course Contents

The kiln, its origin and development types of the kiln, and their design and operation. Sources of energy for firing kilns – electricity, gas, oil, kerosene, wood and coal. Factors necessary for kiln construction and usage. Kiln furniture – prop shelves, stilt. Kiln firing fuels and energy utilization in the ceramic and glass industries. Technical and economic considerations in the choice of fuels and energy. Introduction to fuel calculation, management, technology, atmosphere, and medium, placement of wares for different firings, the firing, and off-loading. Materials for kiln building. Raw materials for Refractories. Types, the technology of production, and properties of refractories for kiln and furnace building. Special refractories. Modern applications of refractories. Experimental methods of testing and evaluation of refractories.

FMJ 321 Technical Drawing and Digital Design**(2 Units; C) (LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. the know-how to translate 3-dimensional digital models into natural objects using appropriate CAM software; and
2. understand application systems such as 3D printing.

Course Contents

The engages in Rudimentary technical drawing skills and hones practice in computer software introduced in FAA 231 and 232. Basic knowledge and applications of software for 2-D design and

modelling will be the focus. Students are encouraged to explore the digital platform's inherent potential to produce design sketches and diagrams for execution in metals and jewellery. Such sketches will be transferred to 3-Dimensional digital modelling skills and 3D animation techniques; introductory learning about contemporary 3-D design modelling and animation will also be engaged.

FMJ 331 Theory and Practice of Metal and Jewellery Design (2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. to understand the properties of metals, alloys, and how they are formed;
2. understand their usable states and nature in the jeweller's craft and trade; and
3. effectively engage studio processes.

Course Contents

The course provides a survey history of metals and basic metallurgy of noble metals, iron, aluminium, copper and its alloys, alloy calculation and chemical and mechanical properties of metals, identification of metals, and assaying processes. Studio assignments will focus on workshop methods/processes such as etching, metal lacquering, embossing colouring, heat treatment of metals, hardening, tempering, normalizing, metal joinery techniques such as brazing, soldering, welding and more like it.

FMJ 341 Enamelling and Lustre Processes (2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. understand the basic technologies that guide enamelling and lustre in the jeweller's craft and trade;
2. gain proficiency in the craft; and
3. explore fresh ground to improve the skill.

Course Contents

The course is Introduction to gemmology and gem Identification, gem species, varieties, and formation. Gemstone hardness and wear ability. Guide to gem cutting terms and classification. Introduction to the process of enamelling on metals. Emphasis is placed on contemporary uses and interpretation. Themes like cloisonné, champlevé, piqué-a-jour, Limoges, graffito, use of foils and metal technique for fabrications as they apply to enamels and enamelling. Pickling solution, metal adhesives, files, wool, tongs, enamelling/forks, enamelling rocks, tweezers, sandglass trays are necessary tools, types, and applications of the enamels on various designs. Lustre's application and its techniques are also engaged.

FMJ 351 Foundry Practice (2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. ability to engage metal casting and direct same;
2. Understand safety measures; and

3. ability to make moulds.

Course Contents

An introductory course to foundry practice, the furnace and melting techniques, equipment and tools for ferrous and non-ferrous metal casting and principles of modelled cast products. Studio practice focuses on industrial metal casting processes, emphasizing shell mould and investment mould casting, sand casting, cores, core prints, core boxes, moulds; i.e., sand moulding; green/damp moulds, skin dry moulds, and skin dry moulds.

FMJ 421 History of Metal and Jewellery Design (2 Units C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. Understand the historical foundations of their practice;
2. Understand how to draw inspiration from such knowledge while practicing;
3. Explore how practice relates to history; and
4. Recognise an atelier style or those of some masters.

Course Contents

The course is a general survey of the history and practice of metals in relation to fashion and the locus of metals and pieces of jewellery. The examples of such items in the fashion ensemble of the pharaohs and other ancient civilizations of the world form the necessary grounds of a survey into subsequent regimes of jewellery design and use up to contemporary times. Strategic to the course is a study of masters and trends in this sphere.

FMJ 431 Theory of Metal and Jewellery Design (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. to understand the properties of metals, alloys, and how they are formed;
2. understand their usable states and nature in the jeweller's craft and trade; and
3. effectively engage studio processes.

Course Contents

The course focuses on theories that govern the decorative process and decorative options: Gem setting, aluminium fabrication and finishing, electroplating, refining of precious metals. Gemmology; stones; synthetic and imitation. Calculation of alloys of noble metals; calculation of gold alloys. Raising and lowering of determined precious metal weights. Calculation of solder alloys/ steel alloys.

FMJ 441 Metal Smiting (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. Engage the forming of metals and their alloys into utilitarian goods in the jeweller's craft and trade.

Course Contents

Advance studio exercises in Ferrous and non-Ferrous metals. Studio assignments focus on oxyacetylene/ arc welding processes of metal joinery; execution of miniature projects like gates, metal furniture, and the likes, advance machine work; turning, boring parting off, thread cutting, engraving and finishing of ferrous metal works; chemical treatment of wrought iron works.

FMJ 451 Jewellery Design

(2 Units; C) (LH 15 PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. further understand the forming of metals and their alloys into utilitarian goods in the jeweller's craft and trade; and
2. master the intricacies of jewellery craft

Course Contents

Complex compositions and advanced techniques, including a combination of processes and materials for complex works in jewellery. Studio assignments will focus on such processes as production of cast jewellery, lecturer-forming, granulation, workshop refining, and recovery of precious metals to such advanced techniques in gold and silver such as gem-setting and findings colouring of jewellery, jewellery findings (hooks and locks) Research findings into contemporary jewellery works, wood, bead and simulated materials, through visits to ateliers or sales points, would be an integral part of the course presented in a term paper.

FMJ 461 Studio Management and Client Services

(2 Units; C) (LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. acquire managerial techniques as professionals;
2. understand the dynamics of the relationship between the client and service provider; and
3. master pricing and persuasive skill premised on offering convincing services

Course Contents

The course serves as a forum to discuss and prepare the recipient for professional practice. Emphasis is placed on the portfolio enhancements, necessary studio apparatuses, ordering the studio space, studio shelf location and display techniques, the implications of professional practice, resources management, studio hands and assistance, equipment management, off-site production, and related issues, costing, client relations' services and ethics of relationships. costing and client relations' services

Minimum Academic Standards

Equipment

Painting Option

Modelling Thrones, Drawing Donkeys, Painting easels, brushes, Drawing Boards, Sets of Carpentry tool, Carpentry working bench, Frame construction equipment, Frame stretching equipment, Staple guns bowls, painting knives and brushes, Aprons, and other handy equipment

Sculpture Option

Modelling stands, Modelling Thrones, Drawing Boards, Chain Saws, Sets of Carpentry tool, Carpentry working bench, bowls, Pugmills, Arc welding machine, Electric hand Drills, Electric Angle Ginders, Hammers, Pliers, Oxy-acetylene welding cylinders and kits, compressor spraying machine and guns, Hydraulic rollers, Carving tools (stone and wood), repoussé punching tools and hammers, Anvils, Vices, Furnace, Bronze and metal casting equipment and crucibles, Aprons, and other handy equipment.

Media Art Option

Cameras (ten) and accessories, Video cameras (ten), Darkroom and darkroom enlargers and accessories Multimedia interactive platform such as Digital Laboratory (with twenty computers and editing software), Television sets, Projectors and screens (three) storage and memory devices among others.

Art History Option

Projectors and screens, Cameras, Scanners, storage and memory devices, Video and slide storage shelves, a gallery space.

Visual Communications Design Option:

Computer sets, Graphic design applications, Graphics tablet and stylus, Digital Camera, Direct Image Printers, Large format printer, Lithographic printing machine, Etching Bed Lino and Wood block press, Etching plates, needles and styluses, Printmaking drying frames, 3D Printer, Monitor calibrators, External hard drives, Projectors and Projector Screens, Drawing materials, Donkeys, Working table, Stools and Studio Design Tables and other essential equipment.

Textile and Fashion Design Option:

Equipment required include Design Tables, Stools, Sewing Machines and Accessories, Looms and Accessories, Large Printing and drafting tables, pattern making tools, Dress Forms, Sewing machines, sewing accessories, pattern design tools, pattern making tools, dress making dummies, pairs of scissors, draping tools, pressing board, pressing iron, drafting tables, fabrics, computer-assisted design tools, Projectors and Projector Screens, and other equipment, cupboards, Computer Assisted Design (CAD) tools, computer sets and other essential equipment, digital embroidery machine,

Ceramic Design Option:

Throwing wheels (manual and electric), Firing Kilns (Electric, Gas, Wood), Test Kilns, Clay Mixers, Pugmills, Ball Mill, Jar Mill, Blunger, Weighing Scales, Jiggering and Jolleying Machines, Glaze Sprayer and Booth, Dryers, Modelling Stands, Extruders, Brick Making Machine, Slab rollers, Shelves, Heat-transfer machine, 3D Printers, computer sets and other essential equipment.

Metal and Jewellery Design Option:

Jewellery Pliers & Side Cutters, Anvil & Bench Peg, Jewellers Saw Frame & Blades, Jewellers Cutters, Soldering Block, Gas Torch, Tweezers, Tribblet, Rawhide Mallet, Files & Sanding Sheets, moulds, core and sand, Furnaces, Polishing Papers, Crucibles, Furnaces, Bandsaw, Rammers, Bellows, Gaggers, shovel, computer sets and other essential equipment.

Staffing**Resource Requirement for Teaching and Learning****Academic Staff**

This should be in the ratio of one academic staff to eight students, where a department has up to eight areas of specialization each area should have at least four lecturers at the senior category. This number should be increased where there are postgraduate programmes.

In order to prevent the practice of indigenous arts and crafts from becoming extinct; traditional craftsmen should be invited to the university for short periods as Artist-in-Residence. It is expected that this will enable them to transfer their skills to younger generation.

Library

Each Faculty/School should be provided with fully equipped library and information technology centre with computers and Internet connectivity and quick reference books, periodicals, journals and audio-visual materials. Such library and information resources will be additional to the University central library facilities.

Classrooms, Laboratories, Clinics, Workshops and Offices

	Space	Use	Minimum (m ²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

Studio/Workshop/Laboratory Spacing and Facilities

Painting/Sculpture/Workshops

Carpentry workshop, Welding workshop, Wood carving workshop, Foundry and metal forging workshop, Studios, Lecture rooms and galleries

Visual Communications Design/Media Art/workshop/Laboratory: Printmaking studio, photography / darkroom studio, printing studio, Editing studio, Lithography workshop, Etching and block printing studio Digital Laboratory and media workshops, TV production studio, Lecture Room, gallery

Textile & Fashion studio/workshop/Laboratory: Screen printing room, dyeing workshop, sewing room, embroidery and knitting studio, Fashion studio, wood workshop, weaving studio, Lecture Room, gallery

Ceramic studio/workshop/Laboratory: Hand building workshop, slip casting workshop, press casting workshop, throwing workshop, plaster workshop, Electric kilns room, Kiln shed, Glaze laboratory, spraying booth, Screen printing room, 3D printing room, Fabrication workshop, Lecture Room, gallery.

Jewellery/Metal studio/workshop/Laboratory: Enamelling laboratory, casting workshop, hammering and machining workshop, welding, brazing, cutting and grinding workshop, chemical room for etching, anodising and patterning, finishing workshop, , Lecture Room, gallery

B. Sc./ . B. Tech Geography

Overview

The study of geography develops the students' concept of the earth as an integrated whole and their understanding of different processes in nature and society, as well as the spatial distribution and interdependence of these processes. The focus is on learning the interaction between the environment and human activities for sustainable development. The environment is understood in its broadest sense, encompassing the physical, chemical, biological, and built environments. In studying geography, the students develop a sustainable way of life whilst promoting attitudes that value both natural and cultural diversity and active participation in solving global problems. Thus, students are trained in the various sub-fields of Geography in particular and environmental sciences in general to understand, exploit and manage their environment in a sustainable way. Core concepts in geography include place, space, landscape, systems thinking and sustainable development. The students also acquire different skills that are becoming more and more valuable in the global village.

Philosophy

The philosophy of the B.Sc. Geography programme is to equip the students with theoretical and practical knowledge to understand the interrelationships among the physical, chemical, biological and human realms of the environment so that they can make effective contributions to the development of Nigeria, Africa and the global community.

Objectives

The specific objectives are to help the student of geography:

1. describe the earth's physical, chemical, biological and human environments and their interrelationships;
2. interpret geographic concepts, theories, problems and methods so that they can apply such knowledge in solving human problems;
3. identify careers in areas like Geographic Information System, surveying, Urban and rural planning; environmental impact assessment; environmental management; climate change. Such skills will equip geography graduates to fit into many areas in both the public and private sectors of the economy;
4. apply geographical concepts to different socio-cultural contexts;
5. cultivate the ability to apply their geographical knowledge and skills to the understanding and solution of societal problems in Nigeria and elsewhere; and
6. develop a range of useful skills and competencies for public, private or self-employment.

Unique features of the programme

demonstrable knowledge of Fieldwork in Geography

1. interpretation of data using Remote sensing and Geographic Information System;
2. classification, analyses and interpretation of Maps;
3. understanding the science of, and environment problems and how to sustainably manage them;
4. clear understanding of climate science, climate change and its global impacts; and

5. demonstration on how to deploy entrepreneurial skills in managing the environment.

Employability skills

A graduate of Geography at the bachelor's honour's level should have the following employability skill:

1. mathematical competence and basic competences in science and technology;
2. digital competence in computer and GIS;
3. analytical skills to interpret the complex environment we live in
4. social and civic competences;
5. effective communication;
6. sense of initiative and entrepreneurship; and
7. cultural awareness and expression

21st century skills emphasized

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Admission and Graduation requirements

Admission requirements:

Admission into the geography programme may be through any of the following modes:

Four (4) / Five (5) year degree admission:

In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include Mathematics, English Language and Geography and any two from literature, history, languages, CRK/IRK, economics and chemistry, in not more than two (2) sittings, to be admitted into the programme.

Direct Entry Admission:

Direct Entry applicants for admission into the B.Sc. Geography degree programme shall possess at least five credits in GCE, 'O' Level, SSCE, NECO. The credits at 'O' level must include Geography, English Language and Mathematics and any other two from science or social sciences of both. In addition, DE candidates shall possess a pass at 'A' level, GCE or IJMB or ND in Geography or its equivalent at least with upper credit and NCE in Geography or equivalent with at least Merit level. HND applicants from relevant disciplines such as Surveying and Geo-informatics, Cartography, Estate Management, Town Planning, Architecture, and Environmental Sciences will also be considered for admission provided they satisfied the requirements above. This is applicable to only five-year programme

Graduation requirements

Total minimum credit required for graduation is 120 and 90 for students admitted through UTME and Direct Entry admissions respectively. In order to graduate, a student should pass all compulsory courses. One semester will normally be devoted to Student's Industrial Training (SIWES)

Global Course structure

100 Level

Course Code	Course title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
MTH 101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary Mathematics II	3	C	45	-
GEO 101	Introduction Physical Geography	2	C	30	-
GEO 102	Introduction to Human Geography	2	C	30	-
GEO 103	Introduction to Practical Geography	3	C	30	45
GEO 104	Local Field Studies	3	C	-	135
GEO 105	Introduction to Environmental Science	2	C	30	-
	Total	22			

200 Level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
GEO 201	Introduction to Geomorphology and Soil Geography	2	C	30	-
GEO 202	Introduction to Climatology and Biogeography	2	C	30	-
GEO 203	Spatial Organization of Society	2	C	30	-
GEO 204	Introduction to Remote Sensing and Geographic Information System	2	C	15	45
GEO 205	Field Course	3	C	-	135
GEO 206	Statistics for Geographers	2	C	30	-
	Total	17			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	45
GEO 301	History of Geographical Thought	2	C	30	-
GEO 302	Geomorphology	2	C	15	45
GEO 303	Science of Climate Change	2	C	30	-
GEO 304	Biogeography	2	C	30	-
GEO 305	Research Method I	2	C	30	-
GEO 306	Field Course	2	C	-	90
GEO 307	Quantitative Techniques in Geography	2	C	30	-
GEO 308	Remote Sensing and Geographic Information System I	2	C	15	45
GEO 309	Students Industrial Work Experience Scheme (SIWES)	15	C	-	675
	Total	35			

400 Level

Course Code	Course Title	Units	Status	LH	PH
GEO 401	Systematic Geography of Nigeria	2	C	30	-
GEO 402	Contemporary Philosophy and Methodology in Geography	2	C	30	-
GEO 403	Research Methods II	2	C	30	-
GEO 404	Quantitative Techniques in Geography II	2	C	20	-
GEO 405	Project	6	C	-	270
GEO 406	Applied Climatology	2	C	30	-
GEO 407	Remote Sensing and Geographic Information System II	3	C	30	45
	Total	19			

Course Contents and Learning Outcomes

GST 111: Communication in English

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing, Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and Mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyze the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyze the concepts of trade, economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building;
6. analyse the role of the Judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigerian people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigerian norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption(WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus)

(2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. Solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

PHY 101: General Physics I (Mechanics, Thermal Physics and Waves) (3 Units C: LH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain the difference between space and time, fundamental laws of mechanics;
2. list and explain sound types and properties of waves; and
3. explain basic principles in physics.

Course Contents

Space and Time, Units and Dimension, Kinematics; Fundamental Laws of Mechanics, statics and dynamics; work and energy; Conservation laws. Moments and energy of rotation; simple harmonic motion; motion of simple systems; Elasticity; Hooke's law, Young's shear and bulk moduli, Hydrostatics; Pressure; buoyance, Archimedes' Principles; Surface tension; adhesion, cohesion, capillarity, drops and bubbles; Temperature; heat; gas laws; laws of thermodynamics; kinetic theory of gases; Sound. Types and properties of waves as applied to sound and light energies. Superposition of waves. Propagation of sound in gases, solids and liquids and their properties. The unified spectra analysis of waves. Applications.

PHY 107: General Practical Physics I (1 Unit C: PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. observe and explain basic principles in physics; and
2. conduct experiments on studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat and viscosity.

Course Contents

This introductory course emphasizes quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat and viscosity. However, emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis and deduction.

GEO 101: Introduction to Physical Geography (2 Units C: LH 30)

Learning Outcomes

This course helps the students to understand how the physical environment operates and functions. At the end of the course, the students should be able to:

1. describe the composition of the earth's crust, atmosphere and hydrosphere;
2. describe the origins of landforms; and
3. identify and explain the cycling of matter and energy.

Course Contents

Composition and structure of the lithosphere, atmosphere and hydrosphere; Nature, distribution, evolution and significance of the First Order Relief Forms of the earth. The earth's radiation, atmospheric and oceanic circulation systems. Introduction to the cycling of matter and energy in eco-systems.

GEO 102: Introduction to Human Geography (2 Units C: LH 30)**Learning Outcomes:**

This course introduces the students to the links between the physical and human world. At the end of the course, the students should be able to:

1. compare world population;
2. identify effects of world populations on physical/environmental resources; and
3. analyze ways to sustainably manage the population and resources.

Course Contents

Scope of human geography and its relation to physical geography. World population: its distribution and patterns of growth/demographic characteristics of selected populations. Human settlements: evolution patterns and functions. Inter-relationships between urban and rural settlements. Environmental resources; the concept of resources: types 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; sustainable management of the resources; The roles of movement and flows of people, goods, energy and ideas.

GEO 103: Introduction to Practical Geography (3 Units C: LH 30; PH 45)**Learning Outcomes**

Ability to read and interpret physical features in maps/aerial photography is critical for understanding geography. At the end of the course, the students should be able to:

1. interpret features, symbols and signs in maps; and
2. classify and interpret physical features in maps.

Course Contents

Map reading: location; map scale; conventional signs; representation of relief and recognition of relief forms; analysis and interpretation of relief forms on maps; analysis and interpretation of cultural features on maps. Graphical and map presentation of geographical data; isoline maps; choropleth maps; dot maps; flow maps and many others.

GEO 104: Local Field Studies (2 Units C: PH 90)**Learning Outcomes**

Field work is an essential geographic activity. At the end of the course, students should be able to:

1. familiarize the students with knowledge of their local environment;
2. introduce students to the use of local knowledge and tools to tackle local problems; and
3. promote local solutions to environmental problems.

Course Contents

Local field studies on vegetation, soils, settlements, earth's resources, landforms, market surveys, population, rural or urban surveys and weather.

GEO 105: Introduction to Environmental Sciences (2 Units C: LH 30)**Learning Outcomes**

This course introduces the students to basic definitions of environmental science and how the environment operates. At the end of the course, the students should be able to:

1. illustrate the multidisciplinary nature of environmental science;
2. define environmental science;
3. interpret how the environment works; and
4. demonstrate how to manage the environment sustainably.

Course Contents

Definitions of environmental science; multidisciplinary nature of environmental science; components of the environment; Environment concepts, Environment as a system; Energy systems in the atmosphere, biosphere, hydrosphere, and lithosphere. Current environmental issues, including climate change, air pollution and other natural hazards; erosion, drought, earthquakes, hurricanes, floods and the likes. Role of man in the environment.

GST 212. Philosophy, Logic and Human existence (2 Units C: LH 30)**Learning Outcomes**

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and

human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211 – Entrepreneurship and Innovation (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking;
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence;
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

GEO 201: Introductory Geomorphology and Soil Geography (2 Units C: LH 30)

Learning Outcomes

This course introduces the students to key concepts and elements in geomorphology and soil geography: At the end of the course, the students should be able to:

1. define the meaning, scope, and why different landforms exist;
2. identify and characterize various landforms in his community; and
3. explain their importance.

Course Contents

The meaning and scope of geomorphology, rock types, their origins and characteristics. Nature and origin of second order relief forms of the continents. Structural landforms. The meaning and

scope of soil geography. Factors of soil formation. Zonal soils; azonal soils and intrazonal soils, Importance of landforms to human development.

GEO 202: Introductory Climatology and Biogeography (2 Units C: LH 30)

Learning Outcomes

The world is facing serious challenge of climate change and other environmental problems. There is urgent need to find sustainable solutions. At the end of the course the students should be able to:

1. define and differentiate between weather and climate;
2. describe the science of weather and climate;
3. identify and classify the drivers of climate and ecological systems; and
4. explain man's impacts on the environment.

Course Contents

The general circulation of the atmosphere – scales and laws of motion. Forces that drive the atmosphere. Major features and models of the circulation, weather-producing systems – air masses and fronts, frontal and non-frontal depressions; tropical systems. Climatic classifications and global systems of climate. Man's influence on the atmosphere. Basic structure and dynamics of plant communities, factors influencing plant growth. Survey of characteristics, distribution and controlling factors of principal or zoned vegetation types. Man's influence on vegetation.

GEO 203: Spatial Organisation of Society (2 Units C: LH 30)

Learning Outcomes

Human societies and geographic features are not evenly distributed or organized. This course helps the students to find order out of the chaos. At the end of the course the students should be able to:

1. define basic concepts of spatial organization.
2. classify different phenomena (population, production, and geographic features) that are spatially dispersed; and
3. interpret land use and patterns and interactions.

Course Contents

Basic concepts of spatial organization: principles of classification of geographical phenomena; growth and spatial distribution of population. Production systems; typology and distribution; location, spacing and growth of settlements; movements over space and transport networks. Land-use; typology, patterns and interaction.

GEO 204: Introduction to Remote Sensing and GIS (2 Units C: LH 15; PH 45)

Learning Outcomes

This course helps the students to understand key concepts in remote sensing and Geographic information system. It is expected that at the end of the course, the students should be able to:

1. explain the history of remote sensing;
2. explain the fundamental principles of remote sensing;
3. apply remote sensing to problem solving;
4. explain the history of geographic information system;

5. illustrate the linkage between remote sensing and GIS;
6. interpret satellite images; and
7. apply GIS to problem solving.

Course Contents

Fundamentals of remote sensing (Definition, history of remote sensing, components of remote sensing, electromagnetic radiation), RS process. Relationship between Remote sensing and Geographic Information System; and the applications of remote sensing remote sensing systems, Imageries across the spectrum, Image acquisition, Image restoration and enhancement, Image processing and interpretations, Image storage and retrieval formats; applications in agriculture, environmental resources management, monitoring and change detection, Urban planning.

GEO 205: Field Course (3 Units C: PH 90)

Learning Outcomes

Field study is an important geographic activity. At the end of the course, students should be able to:

1. familiarize the students with their local and surrounding environment;
2. students should have been taken on study tour beyond their local environment; and
3. familiarize themselves with geographic features, social and economic patterns of human activities.

Course Contents

Detailed study of the geographical and geological forms and processes, the man and environment interactions, and the social and economic patterns as well the urban geography. Their knowledge of cartography, remote sensing, GIS are all brought to bear in interpreting their environment.

GEO 206: Statistics for Geographers (2 Units C: LH 30)

Learning Outcomes

Quantification has become an important aspect of research in geography. This course introduces the students to various methods and techniques of geographic research. At the end of the course, the students should be able to:

1. use statistics in geographic research;
2. sample from a given population; and
3. apply descriptive and inferential statistics in geographic research.

Course Contents

The place of statistics in geography; Data description and characteristics; Discrete and continuous variables, Data Scales, Frequency distributions and graphical presentation; Measures of central tendency and variability. Methods of sampling; spatial sampling, description of point patterns; nearest neighbour analysis.

GST 312- Peace and Conflict Resolution (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;

3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Jukun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

describe the key steps in venture creation;

1. spot opportunities in problems and in high potential sectors regardless of geographical location;
2. state how original products, ideas, and concepts are developed;
3. develop business concept for further incubation or pitching for funding;
4. identify key sources of entrepreneurial finance;
5. implement the requirements for establishing and managing micro and small enterprises; and
6. conduct entrepreneurial marketing and e-commerce;
7. apply a wide variety of emerging technological solutions to entrepreneurship; and
8. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan

competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy and the likes*. Digital Business and E-Commerce Strategies).

GEO 301: History of Geographical Thoughts

(2 Units C: LH 30)

Learning Outcomes

This course helps students to advance their understanding of the theory and historical development in geography in various parts of the world. At the end of the course, the students should be able to:

1. explain historical development in geography;
2. classify the nature and challenges of geographic research;
3. use spatial and critical thinking skills for solving problems in society; and
4. extend the frontiers in geographic thought.

Course Contents

History of geographical thoughts in relation to science. The role of theory on science and geography. Methods in natural and social sciences. The nature and problems in geographical research. Course studies from Greek time up to the present. Frontier in contemporary geographical thought.

GEO 302: Geomorphology

(2 Units C: LH 30)

Learning Outcomes

There are various geomorphic features in the world. A careful study of the landforms will reveal the factors responsible for their development. At the end of the course, students should be able to:

1. explain origin of landforms;
2. describe forces responsible for landforms development;
3. identify and classify landforms;
4. describe landforms development; and
5. foster sustainable human development.

Course Contents

Key content includes Nature and scope of geomorphology: aims and objectives of geomorphology. Developments in geomorphic thought; Approaches to geomorphological studies, Conceptual developments in geomorphology. Landforms, their formative agents and processes; classification of landforms; volcanic and tectonic landforms, landforms of weathering and mass

wasting, fluvial landforms, coastal landforms, Aeolian landforms, glacial landforms. Introduction to applied geomorphology.

GEO 303: Science of Climate change (2 Units C: LH 30)

Learning Outcomes

Climate change is already disrupting ecological, atmospheric and hydrologic systems. Yet there is poor understanding of the science of climate. At the end of the course, students should be able to:

1. explain the science of weather and climate;
2. classify different world's climate;
3. identify causes and effects of climate change; and
4. characterize global response to climate change.

Course Contents

Subject-matter and scope of climatology. Historical developments of meteorology and climatology. Physical climatology: Solar radiation, atmospheric temperature, atmospheric moisture, air masses, fronts and storms; winds and the global air circulation system. Regional climatology: classification of climates; examples of climate classificatory systems; climatic regions of the world, the science and politics of climate change; adaptation and mitigation of climate change, climate-preneurship to leverage the opportunities presented by climate change; global strategies and the role(s) of institutions and organizations: UNFCCC, WMO, UNEP, IPCC. Manifestations of climate change; vulnerability to climate change. Adaptation to climate change. Communicating climate change. Climate change versus environmental change. Nigeria's response to climate change, The Nationally Determined Contributions (NDC).

GEO 304: Biogeography (2 Units C: LH 30)

Learning Outcomes

The relationship and interactions between the biotic and abiotic factors are critical to finding sustainable solutions to loss or extinction of living things. The study of Biogeography is useful for resource conservation and planning. At the end of the course, students should be able to:

1. identify different life forms;
2. explain the factors responsible for their distribution;
3. describe how ecosystems interact and function;
4. describe vegetation change; and
5. examine the role of man in ecosystem modification.

Course Contents

Principles and concept of biogeography. Vegetation types; factors affecting flora and fauna distribution at various scales. The concept of the ecosystem. The structure and functioning of terrestrial and aquatic ecosystems. Vegetation changes through time: adoption, cyclical, fluctuations, succession and climax. Nutrient cycling, the role of man in ecosystem modification, soil studies and many others.

GEO 305: Research Method I**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. define basic research concepts;
2. select appropriate research topics;
3. formulate research questions and hypotheses; and
4. analyze data.

Course Contents

Understanding basic elements of research methods in geography: Selection of a research topic; definition of study problems and objectives; Formulation of research hypotheses; Experimental design for collection and analysis of data; writing a research proposal.

GEO 306: Field Course**(2 Units C: PH 90)****Learning Outcomes**

At the end of the course, students should be able to:

1. appreciate fieldwork is an important geographic activity;
2. identify geographical features;
3. conduct hands-on field exercises; and
4. examine the relationships between and among features.

Course Contents

Eight to ten days intensive field studies designed to illustrate the application of theories, concepts and techniques of geographical analysis. Examples of field study activities include rural land use studies, urban studies, vegetation and soil studies, landform studies and market surveys. It is expected that the students should travel outside the State where the University is located so they can be exposed to different geographic features.

GEO 307: Quantitative Techniques in Geography**(2 Units C: LH 30)**

Learning Outcomes In conducting geographic research, the students will require understanding of descriptive and inferential statistics. At the end of the course, students should be able to:

1. appreciate the value of statistics in geographic research; and
2. simplify the complex world problems.

Course Contents

Introduction to descriptive and inferential statistics, parametric and non-parametric tests; Survey design and sampling techniques, Elementary statistical analysis of spatial patterns.

GEO 308: Remote Sensing and Geographical Information System I (2 Units C: LH 15; PH 45)

Learning Outcomes

We are in the digital age and students of geography must appreciate the significance of geographic information system in addressing complex spatial problems. At the end of the course, the students should be able to:

1. input data;
2. analyze data;
3. interpret data; and
4. undertake modelling of various scenarios.

Course Contents

Introduction to Remote sensing, Key contents include: Elements of remote sensing system, Techniques of remote sensing. Interpretation and analysis of visual and digital imageries. remote sensing application, Integration of remote sensing and GIS in geographical research, case studies GIS and the information age, Capabilities of GIS, Spatial data and their sources for GIS analysis, Raster and Vector data, Data Entry, GIS analysis and modelling data issues and problems.

GEO 309: SIWES

(15 Units; C: PH 675)

Learning Outcomes:

The Students Industrial Work Experience Scheme is crucial to practical understanding and application of geography in life situation. At the end of SIWES attachment, students are expected to:

1. match theory with hands-on experience in the work place;
2. familiarize themselves with the major activities taking place in their places of attachment; and
3. Report on the entire SIWES experience.

Course Contents

Geographers are sent to institutions such as armed forces, Ministries, Departments and Agencies of Government, Schools, Boundary Commission, National Population Commission as well as the Private organizations. Depending on the nature of their places of attachment, they are to participate in activities like map making, planning practices land, soil and water resources evaluation; human and socio-economic surveys, basic operation of field and laboratory equipment and facilities, practical and operational climatology, instrumentation in geography; and any other assignment given to them by their industrial based Head of Department. At the end of the exercise, they are to report on the entire experience.

GEO 401: Systematic Geography of Nigeria

(2 Units C: LH 30)

Learning Outcomes

This course focuses attention on a thematic approach to understanding the geography of Nigeria covering a range of physical, socio-economic and human phenomena. At the end of the course, students should be able to:

1. define concepts such as population, industrialization, urban systems;
2. explain the geography of Nigeria; and
3. characterize different ecological systems and development trajectories in Nigeria.

Course Contents

Spatial patterns: ecological zones; growth and distribution of population; natural resources base; agricultural production and marketing systems; industrialization: transport development; internal and external exchange. Concepts and models; river basins; city and community regions; migration flows, urban systems; modernization; development strategies.

GEO 402: Contemporary Philosophy and Methodology in Geography (2 Units C: LH 30)**Learning Outcomes**

At the end of the course, students should be able to:

1. compare and describe current philosophies and methodologies of geographical research; and
2. expand the frontiers of research.

Course Contents

Paradigm shifts within scientific approach to geographical research, quantification and classification in geography; theories and models in geography; systems analysis in geography and spatial thinking skills

GEO 403: Research Method II (2 Units C: LH 30)**Learning Outcomes**

At the end of the course, students should be able to:

1. undertake a review of methodologies of Geographical Research;
2. identify and describe problems; and
3. select analytical tools in the interpretation of results.

Course Contents

Area delineation of source of data, creation of research instruments, formal acquisition of data, appropriate statistical analyses, writing up of research finding and conclusion.; application of research findings in the real world.

GEO 404: Quantitative Techniques in Geography II (2 Units C: LH 30)**Learning Outcomes**

This course goes a step further by training the students in quantitative techniques in geography.

At the end of the course, students should be able to:

1. compute inferential statistics such as correlations, regression, principal components analysis, detrended correspondence analysis; and
2. use statistical software in analyzing geographic data.

Course Contents

Introduction to models and their testing, Advanced statistical techniques, Inferential Statistics; qualitative data analysis, spatial data analysis. Introduction to statistical behavioural models. Use of statistical software (SPSS, EPI INFO, MINITAB, STRATA, eVIEW) in analyzing Geographic data.

GEO 405: Final Year Project**(6 Units C: PH 270)****Learning Outcomes**

At the end of studying quantitative techniques and other research methods, students should be able to:

1. conduct independent field research;
2. undertake sampling;
3. analyze the data; and
4. interpret the observed phenomena.

Course Contents

The Final year Project should cover but not limited to the following topics: soil, vegetation, map interpretation, remote sensing, GIS, regional, medical geography, disease ecology, climate change, hydrology, population studies, market studies among others. An individual study chosen by the student(s) with the approval of the Department should be carried out under the supervision of a senior member of staff. This will normally be started in the second semester of the third year. The final report of not more than 10,000 words in length should be submitted by the last week of second semester lectures in the fourth year.

GEO 406: Applied Climatology**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. define climatology;
2. classify agro climatic zones;
3. explain tropical weather patterns; and
4. explain climate change impacts in the tropics.

Course Contents

Bioclimatology, agro climatology, climatology and the built environment, climate change and its impact on rural and urban environments, climate change and sustainable development goals, , and climate change and its implications on humans and various human and economic activities. Definition and delimitation of the "Tropics" Rationale for studying the climatology of the tropics. Radiation conditions in the tropics. Temperatures in the tropics. Tropical precipitation. Tropical disturbances: Tropical weather systems. Applied tropical climatology: Tropical agro climatology; tropical bioclimatology, global circulation system and its influence in the tropics., links between the tropical climates and the temperate climates, climate change and climate-premiership.

GEO 407: Remote Sensing and GIS II**(3 Units C: LH 30; PH 45)****Learning Outcomes**

This course prepares the students to move beyond understanding of key concepts in remote sensing to real processing and analyses of digital images. He /She is taught to understand Spatial Database Management Systems and how to utilize them for planning purposes. It is expected that at the end of the course, the students should be able to:

1. process and analyze digital images;
2. store and retrieve digital data;
3. apply techniques of remote sensing to problem solving in real life;

4. characterize various types of information/data models and systems;
5. manage hardware and software; and
6. interpret information using GIS tools.

Course Contents

Remote Sensing analytic digital image processing system. Fundamentals (Computers imaging systems, image representation- colour space, image sampling quantization, quality measurement, data products, storage and retrieval- Photowite systems, dip systems and software. Preprocessing (Encoding and decoding, sources of image degradation, atmospheric, radiometric and geometric errors, systematic and non-systematic correction, image geometry operations. Image Enhancement (Image characters, histogram, scatter plots, statistics and spatial statistics for processing, image models, spatial transforms, enhancements: radiometric and geometric operators, Fourier transforms, scale space transforms, image fusion, texture analysis. Image Classification (Spectral discrimination pattern matching Baye's theorem- signature and feature extraction- training and classification, supervised and unsupervised methods error matrix and accuracy estimates. Image Analysis (Concept of uncertainty, fuzzy partitioning, neural nets, sub-pixel classification concept, pattern recognition, feature descriptors). Remote sensing application, Integration of Remote Sensing and GIS in geographical research, case studies.

(Basic concepts of Data, Information, File system vs DBMS, Data models, Hardware and software requirements, Database Management Systems, Database languages, Database Architecture, users and administrators, Classification of Database Management Systems. Relational Data Model (Relational model, Data Structure, Constraints, Key, Codd's Rule, Relational Algebra, Fundamental operations, Additional operations, Extended operations Null values. SQL (SQL, Data Definition, Basic structure of SQL queries, set operations, Aggregate, Functions, Null values, Nested sub queries, Complex queries, Views, Embedded SQL, Dynamic SQL, Triggers. Database Design and Management (Design process, Entity Relationship Model, Constraints, EER, Diagrams, Atomic domain and First Normal Form, Functional Dependency, Decomposition using Functional dependencies, Normalization using Multi-Valued Dependencies and Join Dependencies, Basic concepts of file organizations, indexing and hashing, Database recovery techniques, Database Security, Handling Spatial Database. Accessing Data Using Ado.Net and Vb.Net (ADO.Net Object Model using OLE DB managed provider, other data providers, Accessing XML data, Building Windows).

Minimum academic standards

Equipment

Laboratories required for geography

Cartography laboratory

List of Equipment required:

1. Topographic maps
2. Theodolite
3. Prismtic compass
4. Abney level
5. Hand held Global Positioning System
6. Cross staff

7. Lighting Tables
8. Measuring tapes
9. Plane table equipment
10. Ranging poles
11. Graduated handheld soil auger

Soil and earth science laboratory

List of Equipment required:

1. Portable multi-parameter meter for water quality analyzer
2. Agilent 240AA Atomic Absorption Spectrometer
3. Soil auger
4. Digital heating mantle spots
5. Volumetric flask
6. Conical/flat bottom flask
7. Beakers
8. Funnel plastic/glass
9. Glass dish
10. Test-tubes with holder and rag

GIS laboratory

List of Equipment required:

1. Workstation with Computers
2. GIS Software (Arc GIS 10.9 and ENV 5,7 saver or standalone)
3. Projector
4. Interactive Screen
5. GNSS Rover System

weather station

1. Manual Weather Station with Raingauge, Stevenson's screen, Anemometer, Wind vane, Sundial, evaporimeter, soil thermometers, temperature thermometers, Barometer, for demonstration teaching and learning.
OR
2. Automated Weather Station with Computer and recordings.

Staffing

The personnel requirements for the programme should reflect students' population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

1. Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

2. Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

3. Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Library

A Departmental and or Faculty Library with local, national and international journals, current books.

Apart from the Faculty and Main University Library, a Department of Geography should be provided with fully equipped library and GIS Laboratory with computers and Internet connectivity and current reference books, periodicals, journals and audio-visual materials. The Department should ensure that updated literatures (soft and hard copies) in all fields of Geography and related disciplines are in the libraries (University and Faculty or Departmental Libraries).

Classrooms, Laboratories, Clinics, Workshops and Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

B. SC./ B. Tech. Industrial design

Overview

The Bachelor of Science (or Bachelor of Technology) in Industrial Design Programme provides learners with appropriate knowledge, skills and research capacities to adopt critical strategies in the development of creative and innovative solutions to problems (opportunities) that are relevant to the specific needs of users, industry and the society in form of mass-produced products, services or systems. The programme places emphasis on the development of high professional skills, as well as exploration, development and applications of indigenous materials in the specialised areas such as Ceramics, Glass, Metals, Textiles, Fashion and Visual and Communication Design. It also focuses on producing graduates with high level of the 21st century skills, business orientation and professional competencies that can make them job creators as well as being employable by diverse industries and particularly in the areas of specialisations offered through the programme. The programme offers sound theoretical and practical training to produce individuals capable of upholding, sustaining, and linking educational experiences to the values and needs of the users and the society. The programme embraces current best global practices in Industrial Design towards achieving sustainable development without undermining the rich cultural, indigenous knowledge of traditional design and production processes in Nigeria.

Philosophy

The philosophy of Industrial design is to produce creative graduates who are concerned with designing functional products from the end-user's point of view such as aesthetics, user-friendliness of the product and ergonomics.

Objectives

The aim of the programmes is to provide students with appropriate training and professional experience and general knowledge that enable acquisition of skills and proficiencies necessary for effective translation of creative concepts and innovative design solutions to finished products and services; The objectives of the programmes are to:

1. raise the level of indigenous knowledge, aesthetic appreciation and cultural awareness in the students to encourage home-grown solutions that are appropriately tailored to the user and societal needs;
2. guide students in using their creative skills to enhance and add breadth to the quality of living through the integration, interpretation and application of advanced scientific knowledge, analytical skills in research and experimentation and technological know-hows in their specialised fields of study to develop innovative solutions for local and international markets;
3. prepare students that will be globally competitive and relevant in the fields of Design and the society in general; and
4. prepare students with both high employability skills as well as the ability for job creation after graduation.

Unique features of the programmes

1. Development of cognitive and problem-solving skills in design thinking that can provide solution to the design needs of the society in the different areas of specialisation in Industrial Design programme
2. Development of pragmatic skills through workshop practices and other practice-based courses
3. Production of graduates with communication skill, information technology skill and marketing skill that can help project and promote their products as valuable brands.
4. Development of sound knowledge of computer-aided industrial design with respect to the concerns of Industrial Design in the 21st century.

Employability Skills

The graduates of Industrial Design programme will be equipped to be:

1. Entrepreneurs of Small, Medium or Large-Scale Industries.
2. Employees in small, medium and large-scales business in their field of specialization
3. Educators and Researchers in relevant institutions/ industries;
4. Products designers and innovators;
5. Consultants in agencies and industries based on relevant material exploration, beneficiation and applications
6. Technologists in Material Laboratories;
7. Personnel in Ministries of Arts, Culture, and Solid Minerals Development;
8. Resource persons in Bureaus of Industrial Design Product Standard;
9. Resource persons in International Organizations such as UNESCO, UNIDO.
10. Museum and Gallery Conservator; and
11. In-house corporate affairs and media department of most organizations and institutions such as banks, oil serving companies, hospitals, the military, government and non-governmental establishments.

21st Century skills emphasized

The programme will lead to the acquisition of the following 21st Century skills:

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Admission and Graduation Requirements

Admission requirements

Five (5) year programme: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Chemistry, and any 2 of the following: Physics, Economics, Technical Drawing, Fine Art and Geography, at no more than two (2) sittings, to be admitted into the five-year programme.

Direct Entry Admission: In addition to satisfying the UTME requirements, candidates seeking admission through Direct Entry must possess:

1. At least two 'A' Level subjects with a minimum of pass grade in at least two subjects from the following: Mathematics, Chemistry, Physics, Technical Drawing, Geography or Economics.
2. A minimum of upper credit in National Diploma with a specialisation in Applied Arts or cognate fields from recognized institutions.

Graduation Requirements

Degree programme in Industrial Design shall be for a minimum of ten (10) and maximum of fifteen (15) academic semesters for UTME students and minimum eight (8) and maximum of twelve (12) academic semesters for Direct Entry. One semester will be devoted to industrial training (SIWES).

Global Course structure

100 Level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	
MTH101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary Mathematics II	3	C	45	-
CHM 101	General Chemistry I	3	C	45	-
CHM102	General Chemistry II	3	C	45	-
IDD101	General Drawing, I	2	C	-	90
IDD103	Basic Design I	2	C	-	90
IDD102	General Drawing II	2	C	-	90
	Total	22			

200 Level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	
ENT 211	Entrepreneurship and Innovation	2	C	15	45
IDD201	Basic Design II	2	C	-	90

IDD203	History of Design I	2	C	30	-
IDD205	Introduction to Graphic Design	2	C	-	90
IDD 207	Introduction to Ceramics and Glass	2	C	30	-
IDD202	Computer-Aided Industrial Design	2	C	-	90
IDD204	History of Design II	2	C	30	-
IDD206	Introduction to Textile and Fashion Design	2	C		90
IDD208	Introduction to Metal Design	2	C	30	-
	Total	20			

300 Level Ceramics option

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
IDC301	Ceramic Forming Techniques I	2	C	-	90
IDC303	Theory of Ceramics Technology I	2	C	30	-
IDC305	Kilns, Methods of Firing, Fuels and Refractories	2	C	30	-
IDC307	Use of Computer in Ceramic Modelling I	2	C	-	90
IDC302	Ceramic Forming Techniques II	2	C	-	90
IDC304	Theory of Ceramics Technology II	2	C	30	-
IDC306	Kiln Design and Construction	2	C	15	45
IDC308	Use of Computer in Ceramic Modelling II	2	C	-	90
	Total	20			

400 Level Ceramics option

Course Code	Course Title	Units	Status	LH	PH
IDC401	Ceramic Workshop Practices I	2	C		90
IDC403	Industrial Ceramics I	2	C	-	90
IDC405	Ceramic Entrepreneurship	2	C	30	
IDC407	Ceramics for Building and Environment	2	C	-	90
IDC409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDC402	SIWES	15	C	-	675

	Total	25			
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500 Level Ceramics option

Course Code	Course Title	Units	Status	LH	PH
IDC501	Technical Ceramics	2	C	30	-
IDC503	Industrial Ceramics II	2	C	-	90
IDC505	Kiln Building	2	C	30	
IDC599	Final Year Student's Project	6	C		270
IDC502	Management, Marketing and Exhibition	2	C	30	-
IDC504	Ethics and Professional Practices in Ceramics	2	C	30	-
IDC506	Ceramic Workshop Practices II	2	C	-	90
	Total	18			

300 Level Fashion Design option

Course Code	Course Title	Units	Status	LH	PH
IDF301	Fashion Drawing and Illustration, I	2	C	-	90
IDF303	Methods and Materials, I	2	C	30	
IDF305	Clothing Construction I	2	C	-	90
IDF307	Digital Fashion Design I	2	C	-	90
IDF302	Fashion Drawing and Illustration II	2	C	-	90
IDF304	Methods and Materials II	2	C	30	
IDF306	Pattern Drafting	2	C	15	45
IDF308	Clothing Construction II	2	C	-	90
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
	TOTAL	20			

400 Level Fashion option

Course Code	Course Title	Units	Status	LH	PH
IDF401	Fashion Drawing and Illustration III	2	C	-	90
IDF403	Digital Fashion Design II	2	C	-	90
IDF405	Fashion Merchandising and Advertising I	2	C	30	-
IDF407	Fashion Design Studio I	2	C		90
IDD409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDF402	SIWES	15	C	-	675

	Total	25			
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500 Level Fashion Design option

Course Code	Course Title	Units	Status	LH	PH
IDF501	Fashion Design Studio II	2	C	-	90
IDF503	Fashion Merchandising and Advertising II	2	C	30	-
IDF505	Ethics and Professional Practices in Fashion	2	C	30	
IDF599	Final Year Student's Project	6	C		270
IDF502	Fashion Design Studio III	2	C	-	90
IDF504	Portfolio Development and Exhibition	2	C		90
IDF506	Fashion Accessories and Surface Ornamentation	2	C		90
	Total	18			

300 Level Glass Design and Technology option

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
IDL301	Properties and application of glass	2	C	30	-
IDL303	Glass raw materials, analysis and Processing methods	2	C	30	-
IDL305	Techniques of Casting, Flame working and Glass blowing I	2	C	-	90
IDL307	Batch calculation Methods	2	C	30	-
IDL302	Computer Applications in Glass Technology	2	C	30	-
IDL304	Glass Melting Furnace, Refractories, Fuels and Fuel Economics	2	C	15	45
IDL306	Glass ceramics and Specialty Glasses	2	C	30	
IDL308	Surface Design in Glass	2	C	-	90
	Total	20			

400 Level Glass Design and Technology option

Course Code	Course Title	Units	Status	LH	PH
IDL401	Industrial Flat Glass Manufacturing Process	2	C	30	-
IDL403	Thermal Compositional and Structural Effects in Glass	2	C	30	-
IDL405	Technical Drawing (Glass Furnace)	2	C	-	90
IDL407	Techniques of Casting, Flame working and Glass blowing II	2	C	-	90
IDD 409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDF 402	SIWES	15	C		675
	Total	25			

500 Level Glass Design and Technology option

Course Code	Course Title	Units	Status	LH	PH
IDL501	Glass Laboratory Practices	2	C	-	90
IDL503	Fibre Glass and Composites	2	C	30	-
IDL505	Primary Sensors for Glass Industry	2	C	30	-
IDD599	Final Year Student's Project	6	C	-	270
IDL502	Glass Workshop Practices	2	C	-	90
IDL504	Management, Marketing and Exhibition	2	C	30	-
IDL506	Ethics and Professional Practices in Glass Industry	2	C	30	-
	Total	18			

300 Level Graphic option

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
IDG301	Drawing- Quick Sketches	2	C	-	90
IDG303	Advertisement Design and Methods, I	2	C	30	-
IDG305	Photography and Motion Pictures, I	2	C	-	90
IDG307	Design for Digital Interfaces and UI/UX	2	C	30	-
IDG302	Illustration	2	C	-	90
IDG304	Advertisement Design and Methods II	2	C	-	90
IDG306	Photography and Motion Pictures II	2	C	-	90
IDG308	Typography and General Printing Process	2	C	15	45
	Total	20			

400 Level Graphic option

Course Code	Course Title	Units	Status	LH	PH
IDG401	Drawing Composition and Illustration I	2	C	-	90
IDG403	Computer Generated Imagery and Animation I	2	C	-	90
IDG405	Film Production and Editing	2	C	-	90
IDG407	Principles and Issues in Graphic Design	2	C	30	-
IDD409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDD402	SIWES	15	C	-	675
	TOTAL	25			

500 Level Graphic Option

Course Code	Course Title	Units	Status	LH	PH
IDG501	Drawing Composition and Illustration II	2	C	-	90
IDG503	Product Packaging and Branding	2	C	-	90
IDG505	Display and Exhibition Techniques	2	C	30	-
IDG599	Final Year Student's Project	6	C		
IDG502	Advanced photography	2	C	-	90
IDG504	Editorial Graphics and Press Advert	2	C	-	90
IDG506	Ethics and Professional Practices in Graphic Design	2	C	30	-
	Total	18			

300 Level Metal Design Option

Course Code	Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
IDM301	Jewellery Design Techniques I	2	C	-	90
IDM303	Metal Smiting, I	2	C	-	90
IDM305	Theory of Metals I	2	C	30	-
IDM307	Enamel and Lustre	2	C	30	
IDM302	Jewellery Design Techniques II	2	C	-	90
IDM304	Metal Smiting II	2	C	-	90
IDM306	Theory of Metals II	2	C	30	-
IDM308	Foundry Practice	2	C	30	-
	TOTAL	20			

400 Level Metal Design option

Course Code	Course Title	Units	Status	LH	PH
IDM401	Jewellery Workshop Practices I	2	C	-	90
IDM403	Welding and Soldering Technique	2	C	-	90
IDM405	Computer-Aided Jewellery Design	2	C	-	90
IDM407	Lapidary and Gemmology	2	C	45	
IDD409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDM406	SIWES	15	C		675
	Total	25			

500 Level Metal Design Option

Course Code	Course Title	Units	Status	LH	PH
IDM501	Jewellery Workshop Practices II	2	C	-	90
IDM503	Trophy and Medal Design	2	C	-	90
IDM505	Ethics and Professional Practices in Metal/Jewellery Design	2	C	45	-
IDM599	Final Year Student's Project	6	C	-	270
IDM502	Jewellery Workshop Practices III	2	C	-	90
IDM504	Cutlery and Coin Design	2	C	-	90
IDM506	Management, Marketing and Exhibition	2	C	45	-
TOTAL		18			

300 Level Textile Option

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	
ENT 312	Venture Creation	2	C	15	45
IDT301	Drawing and Illustration I	2	C	-	90
IDT303	Textile Design	2	C	15	45
IDT305	Dyeing and Printing in Textiles I	2	C	-	90
IDT307	Woven and Constructed Textiles I	2	C	-	90
IDT302	Introduction to Textile Science	2	C	30	-
IDT304	Methods and Materials in Textiles	2	C	15	45
IDT306	Dyeing and Printing in Textiles II	2	C	-	90
IDT308	Woven and Constructed Textiles II	2	C	-	90
	TOTAL	20			

400 Level Textile Option

Course Code	Course Title	Units	Status	LH	PH
IDT401	Drawing and Illustration II	2	C	-	90
IDT403	Computer Application in Textile Designs	2	C	-	90
IDT405	Textiles Construction & Manufacturing Processes	2	C	-	90

IDT407	Colour Chemistry and Textile Technology	2	C	30	-
IDD409	Research Methods and Techniques in Industrial Design	2	C	30	-
IDD402	SIWES	15	C	-	675
	TOTAL	25			

500 Level Textile Option

Course Code	Course Title	Units	Status	LH	PH
IDT501	Technical Textiles I	2	C	30	-
IDT503	Dyeing and Printing in Textiles III	2	C	-	90
IDT505	Textile Management and Marketing and Exhibition	2	C	30	-
IDD599	Final Year Student's Project	6	C	-	270
IDT502	Technical Textiles II	2	C	30	-
IDT504	Combined Reproduction Techniques II	2	C	-	90
IDT506	Ethics and Professional Practice in Design	2	C	30	-
	TOTAL	18			

Course Contents with Learning Outcomes

IDD 101: General Drawing I

(2 Units; C; PH 90)

Learning Outcomes:

At the end of the course the students should be able to:

1. develop accuracy in visual perception, judgment of distance, direction and proportion;
2. develop technical and manipulative skill; and
3. solve basic problems in the observation and interpretation of forms with concern for space, time, shapes.

Course Contents

Introduction to basic problems in the observation and interpretation of forms with concern for space, time, shapes, form and composition. Exercise in the use of basic principles and techniques of drawing lines, basic shapes; at this stage, the flexibility of the student is put to test. Skill development in drawing with chiaroscuro.

IDD 102: General Drawing II**(2 Units; C; PH 90)****Learning Outcomes:**

At the end of the course, students should be able to

1. prepare quick sketches of the shapes and forms of different objects;
2. make detailed drawing of objects through still life drawing;
3. capture in drawing and shading textural qualities of different objects; and
4. apply tonal value in shading.

Course Contents

Studies in the basic problems in the observation and interpretation of form using variety of media and subject matter. Drawing from still-life objects such as household utensils, electrical appliances, musical instruments, mechanical objects, among others. Proper study of light on objects with concentration on the distinct tones of shading that characterize a lighted object such as; lighted surface, shade, shadow, reflection and cast-shadow.

IDD 103/104:**Basic Design I and II****(6 Units; C; PH 270)****Learning Outcomes:**

At the end of the course, students should be able to

1. demonstrate the understanding of three-dimensional practice in many facets through conceptual and technical approaches;
2. express expansive experience grounded in material tradition that promote creative study challenges in various disciplines of Industrial Design;
3. identify basic tools, materials and techniques used in ceramics, fashion design, graphics, textiles, glass design and technology and metal design;
4. explore the language and grammar of design at both two- and three-dimensional level;
5. analyse principles of form and spatial organization; and
6. make relief design.

Course Contents

General introduction to basic tools, materials and techniques used in ceramics, fashion design, graphics, textiles, glass design and technology and metal design. It serves as a foundation course that involves the practical exploration of the language and grammar of design at both two- and three-dimensional level. Students are introduced to fundamentals of design, design thinking and ideation process with preliminary exercises of procedural usage of shapes, forms and space to evolve creative ideas. Study of elements and principles of design and its relationship to various industrial design disciplines. Basic requirements of design – function, aesthetic and ergonomics. Introduction to the basic techniques in design, with emphasis on projects using basic shapes, natural forms and found objects leading to product design. Study of principles of form and spatial organization, relief designs, mobiles and objects in the round, modelling and prototyping. Definition, types and methods of reproducing designs. Study of basic repro methods, tools and materials.

Basic Design II involves intensive exploration of shapes, forms and space. The focus is on the examination of design in terms of perception of form, technical application, and identification of materials and production methods and basic introduction to design. The role of design in meeting

the functional, aesthetic and ergonomic requirements of industrial design products will be analysed. Knowledge of factors determining appropriate design including environmental sustainability and manufacturing techniques. Colour studies. Interrelationship of two and three-dimensional designs.

CHM 101: General Chemistry I (3 Units C: LH 45)

Learning Outcomes

At the end of this course, the students should be able to:

1. define atom, molecules and chemical reactions;
2. discuss the Modern electronic theory of atoms;
3. write electronic configurations of elements on the periodic table;
4. rationalize the trends of atomic radii, ionization energies, electronegativity of the elements based on their position in the periodic table;
5. identify and balance oxidation – reduction equation and solve redox titration problems;
6. draw shapes of simple molecules and hybridized orbitals;
7. identify the characteristics of acids, bases and salts, and solve problems based on their quantitative relationship;
8. apply the principles of equilibrium to aqueous systems using LeChatelier's principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures;
9. analyze and perform calculations with the thermodynamic functions, enthalpy, entropy and free energy; and
10. determine rates of reactions and its dependence on concentration, time and temperature;

Course Contents

Atoms, molecules, elements and compounds and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization and shapes of simple molecules. Valence Forces; Structure of solids. Chemical equations and stoichiometry; Chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.

CHM 102: General Chemistry II (3 Units C: LH 45)

Learning Outcomes;

At the end of this course, the students should be able to

1. state the importance and development of organic chemistry;
2. define fullerenes and its applications;
3. discuss electronic theory;
4. determine the qualitative and quantitative of structures in organic chemistry.
5. state rules guiding nomenclature and functional group classes of organic chemistry;
6. determine rate of reaction to predict mechanisms of reaction;
7. identify classes of organic functional group with brief description of their chemistry;
8. discuss comparative chemistry of group 1A, IIA and IVA elements; and
9. describe basic properties of Transition metals.

Course Contents

Historical survey of the development and importance of Organic Chemistry; Fullerenes as fourth allotrope of carbon, uses as nanotubes, nanostructures, Nano chemistry. Electronic theory in organic chemistry. Isolation and purification of organic compounds. Determination of structures of organic compounds including qualitative and quantitative analysis in organic chemistry. Nomenclature and functional group classes of organic compounds. Introductory reaction mechanism and kinetics. Stereochemistry. The chemistry of alkanes, alkenes, alkynes, alcohols, ethers, amines, alkyl halides, nitriles, aldehydes, ketones, carboxylic acids and derivatives. The chemistry of selected metals and non-metals. Comparative chemistry of group IA, IIA and IVA elements. Introduction to transition metal chemistry.

MTH 101: Elementary Mathematic I (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. explain Set, Subset, Union, Intersection, Complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve problems using binomial theorem;

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers. Mathematical induction, real sequences and series. Theory of quadratic equations and binomial theorem. Complex numbers; algebra of complex numbers and the Argand diagram. De-Moivre's theorem and nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to

1. explain the types of rules in differentiation and integration;
2. discuss the meaning of function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes;

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching. Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

IDD 201 Technical Drawing

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate competence in technical drawings; and
2. solve design problems through technical drawings.

Course Contents

Industrial design programme emphasizes learning the skills and techniques of design and production tools, such as the drawing board and drawing instruments. This course is an introduction to drawing tools and equipment. The use of lines and angles, circumscribing circles, construction of polygons, polyhedrons, and eclipses. Principles of tangency, isometric and oblique projections, section views. Emphasis is based on development and application of technical drawings to solve design problems.

IDD 202: Computer Aided Design and Development

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate the understanding of computer hardware, software systems; and
2. translate 3-dimensional digital models into real objects using appropriate CAM software and application systems such as 3D printing.

Course Contents

In Computer Aided Design and Development, students are introduced to the use of computer software in design. Introductory digital 2-dimensional design exercises will be conducted. Basic knowledge and use of relevant software relevant in 2-D design and modelling will be the focus at this level. Students will be encouraged to explore both conservative and non-conservative concept to initiate projects in respective areas of specialisation in Industrial Design. It will explore study on 3-Dimensional digital modelling skills and 3D animation techniques, introductory learning about 3-D design modelling and animation with exposure to current trends.

IDD 203: History of Design I

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. discuss the fundamentals of design history and theory, beginning with Historic Times: Pre-historic design in Africa (North, West, East and South Africa); and
2. discuss important innovations and breakthrough technologies that have shaped the evolution of visual communication.

Course Contents

This course surveys the pivotal events and achievements that led to the current state of integrated communication design. The unceasing quest to give form to ideas is traced from the pictographs

painted on cave walls to the latest imaginative designs. Introduction to the fundamentals of design history and theory, beginning with Historic Times: Pre – historic design in Africa (North, West, East and South Africa). Concept of design in Africa discussed, 16th – 19th centuries History of Art and Design in Africa, Europe and America; schools of thought on design; lectures, tutorials and library investigations. Through lectures, videotapes, discussions, presentations and research, students are introduced to the creative thinkers, important innovations and breakthrough technologies that have shaped the evolution of visual communication.

IDD 204: History of Design II (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyse the parameters that influence the ancient and contemporary designs;
2. discuss the history of Design in Nigeria citing examples from the different specialisations of Industrial Design; and
3. discuss the role of art and design in technology and in nation building.

Course Contents

History of Design II explores more studies on design for today: Precepts of Modern Design, Research and Development, Industrial Design, Design and Technology. General survey of West African Design. The growth of Nigerian contemporary design, proponents, techniques, and styles as well as their social and political significance. The role of art and design in technology and in nation building. The history of design in Nigeria will be studied, with examples cited from the different specialisations of Industrial Design; such as surface and structured decorations in Nigerian design history with references to ceramics, textiles, graphics, fashion design, glass, metal work, and Jewellery

IDD205: Introduction to Graphics and Communication Design (2Units C: PH 90)

Learning Outcomes:

1. explore the interaction of text, sound, still pictures, motion pictures, and animated pictures;
2. demonstrate current trends about animation;
3. organise verbal and non-verbal elements of design;
4. apply theoretical principle of design in their design assignments;
5. explore the characteristics and features of multimedia system;
6. discuss the challenges of multimedia system; and
7. present the applications of multimedia system.

Course Contents

Practical exploration of language and grammar of design at both two- and three-dimensional levels; Basic topography, layout rendering, the organization of verbal and non-verbal elements of design, theoretical design principle. Introduction to the theories of computer-controlled integration of graphics, drawings, still and moving images, animation, audio and other media. Learning about animation with exposure to current trends. Introduction to multimedia system with emphasis on the characteristics, challenges, features, components and applications.

IDD 206: Introduction to Textiles and Fashion Design**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to

1. describe the purpose of clothing, protection of clothing, modesty, attraction and communication, clothing culture and communication; and
2. identify careers and opportunities in textiles and fashion design fields.

Course Contents

Introduction to the tools and materials of textile manufacture and textile design; Equipment of textile manufacture; textile designs, repeating and non-repeating designs colour; line theory, form plane. History, development and marketing of textiles, use of textiles; Relationship between textiles and fashions; fashion vocabulary (style, mode, vogue, culture, fad); Classifications and properties of fibres. Introduction to the different methods of fabric construction – weaving, knitting, felting, non-woven, lace, knotting and braiding. Classification of fabrics and use, material, weaves construction, thickness, surface characteristics among others.

IDD207: Introduction to Ceramics and Glass**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to

1. explain the fundamentals of ceramics and glass subjects; and
2. identify careers and opportunities in ceramics and glass fields.

Course Contents

This course is a foundational course in ceramics and glass. It exposes the students to the fundamentals of ceramics and cognate subjects. The students will learn about general concepts of materials science, definition and scope of ceramics and ceramic materials, classification of ceramic materials – conventional and advanced, areas of applications. The design and making of innovative high-quality artefacts using ceramics.

IDD208: Introduction to Metal Design**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to

1. define metals and the technology of fine metal works; and
2. identify careers and opportunities in ceramics and glass fields.

Course Contents

General introduction to metals and the technology of fine metal works.

ENT 211: Entrepreneurship and Innovation**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking
1. state the characteristics of an entrepreneur;
2. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence;
3. engage in entrepreneurial thinking;
4. identify key elements in innovation;
5. describe stages in enterprise formation, partnership and networking including business planning;
6. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
7. state the basic principles of e-commerce.

Course Contents

Concept of entrepreneurship (Entrepreneurship, intrapreneurship/corporate entrepreneurship,). Theories, rationale and relevance of entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of business plan, forms of business ownership, business registration and forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

GST 212. Philosophy, logic and human existence**(2 Units C: LH 30)****Learning Outcomes**

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character molding.

300 level Ceramics option

IDC301 Ceramic Forming Techniques I

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. develop basic creative skills and forming techniques in ceramics; and
2. identify and understand the appropriate ceramic bodies suitable for various forming techniques (dry and wet processes) and the necessary tool kits and equipment to achieve the desired result.

Course Contents

Students are introduced to various clay-based ceramic production methods through hands-on experience. This first part will focus on traditional, soft plastic and low-volume techniques such as throwing and wheel turning. In addition to this, hand-building techniques will be explored for ceramic form modelling, where students can use clay to create unique sculptural objects that can be mass-producible. The aspect of hand-building will incorporate effective use of coils in object building, slab method in making clay models. Students are encouraged to initiate their target ideas from sketches and concept development, acquitting themselves with proper studio maintenance and safety culture.

IDC 302: Ceramic Forming Techniques II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. develop basic creative skills and forming techniques in ceramics;
2. identify and understand the appropriate ceramic bodies suitable for various forming techniques (dry and wet processes); and
3. demonstrate proficiency in the use of the necessary tool kits and equipment to achieve the desired bodies suitable for different forming techniques.

Course Contents

In Ceramic Forming Techniques II, students will explore further the use of clay as a good medium for expression of idealised concept and creative forms in ceramic modelling. This aspect will cover high volume mechanical techniques such as jiggering and jollying. Other techniques to be introduced include particulate forming processes such as slip casting, tape casting, injection

moulding, pressing and stiff plastic method such as extrusion. Colloidal processing and shaping of complex non-oxide ceramics such as direct coagulation casting, gel casting will be introduced.

IDC303 Theory of Ceramic Technology I

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. explain preparation and blending of ceramic bodies;
2. describe the methods of characterisation of ceramic materials;
3. calculate physio-mechanical properties of ceramic materials such as water absorption, true density, bulk density and modulus of rupture, using appropriate formulae; and
4. describe drying & firing processes.

Course Contents

Determination of different physico-mechanical properties such as water absorption, true density, bulk density and modulus of rupture of various fired bodies and many more. Ceramic materials and their characteristics with regards to chemical composition, physical, mechanical and thermal properties. Collection of materials such as Feldspar, Quartz, Kaolin, Whiting from different sites for study on effective means of processing and characterisation, and applications. ceramic material characterisation and analysis, covering areas such as characterisation and specification of ceramic materials, chemical and phase compositions, particle mechanics and rheology, applications in ceramic processing, refractories, material beneficiation process, forming processes, drying processes, and firing processes. Firing – firing system, pre-sintering processes, sintering, vitrification and cooling.

IDC304: Theory of Ceramic Technology II

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. classify ceramic minerals and their mineralogical properties;
2. demonstrate characterisation of ceramic materials; and
3. measure the properties of ceramic materials;

Course Contents

Theory of Ceramic Technology II introduces mineralogy and mineralogical studies: classification of ceramic minerals and their mineralogical properties. Structures and textures of minerals and their significance in mineral genesis and mineral treatment. Application of mineralogy to mineral processing technology. The assessment of ores, unit processes and products in mineral treatment operation by quantitative mineralogical analysis. Criteria for selection of grinding and screening equipment and mineral concentration techniques. Selection of mineral concentration equipment. Design, testing and drying; materials handling. Safety considerations in mineral processing industries.

IDC305: Kilns, Methods of Firing, Fuels and Refractories**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to

1. classify different types of kiln and furnaces; and
2. describe fuels and energy utilisation in the ceramic and glass industries.

Course Contents

Kilns and furnaces for ceramic and glass production. Basic history and development of kilns. Classification and types of kilns and furnace. Survey of the principal fuels for ceramic and glass production: solid, liquid and gaseous fuels. Bio-fuels. Conventional and non-conventional energy: electrical, solar, nuclear, geothermal energy. Fuels, classification and testing of fuels. Fuels and energy utilisation in the ceramic and glass industries. Technical and economic considerations in the choice of fuels and energy. Introduction to fuel calculation, management and technology. Raw materials for Refractories. Types, technology of production and properties of refractories for kiln and furnace building. Special refractories. Modern applications of refractories. Experimental methods of testing and evaluation of refractories.

IDC306: Kiln Design and Construction**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the end of the course, students should be able to

1. identify materials needed in kiln construction;
2. describe heat measuring tools and kiln log; and
3. demonstrate preliminary knowledge of kiln construction, heat measuring tools, and kiln log (kiln–heat management) in effective firing of ceramic wares.

Course Contents

The course aims to develop kiln designs and their construction principles with a view of orientating the students on the rule that guides design and construction of kiln. This course provides the student with the fundamental principles that govern kiln design and construction. Materials that are used in the construction of kilns such as kaolin, silica-alumina, combustible organic matter (saw-dust, rice husk), grog, fireclay and other refractory materials are explored. These would lead the students to a practical demonstration of kiln construction, heat measuring tools, and kiln log in kiln–heat management to fire ceramic wares effectively.

IDC307/ IDC308: Use of Computer in Ceramic Modelling I and II**(4 Units C: PH 180)****Learning Outcomes:**

At the end of the course, students should be able to

1. use the computer in rendering their works in 3D; and
2. develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms.

Course Contents

Conceptualisation of three-dimensional ceramic forms through freehand to the use of software packages to develop the sketches into three-dimensional forms. The course enables students to effectively use the computer in rendering their works in three dimensions and provide students with the opportunities to develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms. As continuation of IDC 308, the Use of Computer in Ceramic Modelling I will further students' knowledge on the development of three-dimensional ceramic forms through freehand to the use of software packages to develop the sketches into three-dimensional forms.

ENT 312 Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis.

IDC401: Ceramic Workshop Practices I

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify the various sections of a typical ceramic workshop;
2. describe the relevance of the various sections in ceramic workshop to the production process; and
3. plan and design a ceramic workshop.

Course Contents

This course is an introductory course in ceramic workshop practice. The course introduces students to the basic processes involved in ceramic production. It seeks to build the students' knowledge on the types of machinery employed in the production of ceramics, their uses and maintenance. The course also includes topics on how to plan and design a ceramic workshop. It

would involve studying the various sections of a typical ceramic workshop and their relevance to the production process.

IDC403: Industrial Ceramics I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. identify different materials that can be used for the formulation of ceramic glazes and their chemical properties;
2. analyse the theoretical aspects in glaze formulation and applications; and
3. demonstrate the practical aspects in glaze formulation and applications.

Course Contents

The course helps students have theoretical and practical exposition into the design and formulation of glaze and applications, identifying different materials that can be used for the formulation of ceramic glazes and their chemical properties. Basic historical trend of glaze development. Different types of glazes and their peculiar characteristics. Opaque, raku, salt, and ash glazes. Theory of glaze formulation. Introduction of limit and unity formula; RO group, R₂O₃ group and RO₂ group. Oxides and their functions in glazes. Glaze/glass colour study. Glaze application through dipping, spraying using trailing. Gloss firing procedure, glaze effects, marbling, pattern transfer, under glaze, in-glaze and on-glaze. Glaze properties and quality evaluation.

IDC405: Ceramic Entrepreneurship (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe the business side of ceramics; and
2. explore ceramics as an entrepreneurial craft and discuss practical tips on setting up a thriving ceramic business venture.

Course Contents

This course will expose students to the business side of ceramics. Under the guidance of the course lecturer, students will explore ceramics as an entrepreneurial craft and will learn practical tips on setting up a thriving ceramic business venture beginning with a viable ceramic business plan adaptable for today's market and consumers' needs. Students will be tasked to familiarise themselves with prevailing market conditions while they embark on initiatives to market their own works through individual endeavour or partnership. A self-reflection on their ventures will be compiled in reports that will be assessed by the course lecturer.

IDC407: Ceramics for Building and Environment (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. state the importance of ceramics in the sustainability environment;
2. conceptualize and develop appropriate themes for executing monumental ceramics in different environments;

3. use appropriate ceramic forming techniques, media and tools to actualise ceramic products meant for the building industry; and
4. manipulate textures, symbols, sprigs and motifs for surface embellishment.

Course Contents

Develop creative concepts by extensively using ceramic materials in a sustainable manner for the production of unique functional ceramics such as tiles, tesserae, wall claddings, bricks, ceramic fittings. for the built environment – design of both interior and exterior spaces. Develop ceramic prototypes for architectural applications and the processes for mass production. Harness all forms of knowledge on the elements and principles of designs, product specifications and ergonomic standards in the making of their 3-dimensional objects.

IDD409: Research Methods and Techniques in Industrial Design (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to explore scientific enquiries into observed problems with a view to solving them.

Course Contents

The course will enable students to have an in-depth knowledge on the need for research, types of research and procedures for conducting research in ceramics. Students will be made to know standard practices for research, developing conceptual framework, research design and analytical methods in social and experimental research.

IDC402, IDD404, IDD406 SIWES

(15 Units C: PH 675)

Students are expected to work during the Industrial Training in the Industries that are related to their areas of ceramics. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participations are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by the departmental supervisors before they are presented formally. Assessment is made on individual presentation.

IDC501: Technical Ceramics

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the fundamental knowledge of Engineering Ceramics with the use of specially processed materials such as Carbides, Nitrides, Silicides, Cermets and Composites;
2. describe the development of ceramics as used in advanced applications such as in the areas of nuclear energy, magneto-hydrodynamics generation, gas turbine blades, abrasives, aerospace, diesel engines, heat exchangers, cutting tools and wear applications; and
3. state the use of ceramics for medical and scientific products.

Course Contents

This course will expose the students to fundamental knowledge of Engineering Ceramics with the use of specially processed materials such as Carbides, Nitrides, Silicides, Cermets and Composites. Students will learn development of ceramics as used in advanced applications as such in the areas of Nuclear energy, Magneto-hydrodynamic generation, Gas turbine blades, Abrasives, Aerospace, Diesel engines, Heat exchangers, Cutting tools, and Wear applications. Other areas to be covered are Ceramics for Medical and Scientific products, Ceramics for optical and dental applications, Ceramics in Electrochemical cells, Ceramic substrates, Ceramic Insulators, Ceramic Capacitor, Dielectrics, Piezoelectric Ceramics, Electro-optic Ceramics and Devices, Magnetic Ceramics, Ceramic Superconductors and Nano Ceramics.

IDC503 Industrial Ceramics II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. explore the use of Plaster of Paris mould for mass production of ceramic products that have uniformity in shapes, light in weight;
2. produce ceramic prototypes with jiggering, jollying; and
3. produce ceramic prototypes with slip casting.

Course Contents

This course is expected to meet the students' need to produce ceramic prototypes with jiggering, jollying, and slip casting – use of Plaster of Paris mould for mass production of ceramic products that have uniformity in shapes, light in weight and easily reproduced without stress. Raw materials (plastic and non-plastic) will be identified and processed using different types of machinery in body preparation. For slip casting, students will be exposed to knowledge about slip property control (viscosity and thixotropic) and weight control by litre weight with the aid of appropriate equipment. In practice, students will learn to develop right quality control procedure using appropriate laboratory equipment such as ball mill, bangers, kilns, torsion viscometer, hydrometer, plastic meter, MOR machine, abrasive machine and dryer. Firing of produced wares in different types of kilns under different firing atmosphere will be practised.

IDC505 Kiln Building

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate the process of packing and firing of kilns;
2. explain firing atmosphere, temperature measurement and tools; and
3. address possible problems in kiln firing.

Course Contents

The course draws on the background knowledge on kiln development and fundamentals of kiln firing from the open pit method to the chambered kilns, choice of fuels, combustion, heat transfer to more in-depth details of refractory materials, properties and to determine applications for the various refractories. This will also relay the experience of the technology of harnessing the refractory materials for effective application in heat treatment of ceramic products sintering and materials processing. Students will be exposed to the process of packing and firing of kilns, firing

atmosphere, temperature measurement and tools, and how to address possible problems in kiln firing: under-firing, over-firing, daunting, bloating, slogging, carbon trapping, shattering and crazing, kiln repairs and maintenance. Issues on environmental demands of refractory technology and sustainable practices will be considered

IDC502 Management, Marketing and Exhibition (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. employ different online and offline media for the promotion of brands and sale strategies;
2. create a compendium of their works from 100 level into visually rich portfolios and diary contents (including digital media) for self-branding and future career prospect;
3. organise and manage sale outlets; and
4. plan and organise educational workshops, trade shows and exhibition.

Course Contents

This course is an expository course in ceramic industrial practice, which builds upon the students' freshly acquired experience from their Industrial Attachment program. It covers core concepts of ceramic management and marketing. However, it also meets the need of the ceramic students essentially as a course that provides further knowledge on the essentials for setting up a ceramic venture in a competitive market. The course also treats ceramic entrepreneurship, teaching the students how to employ different online and offline media for the promotion of brands and sale strategies. Organisation and management of sale outlets; development of educational workshops, trade shows and exhibition. Approaches to the design of effective space planning, lighting, audio-visual presentations, portfolio presentation and materials are explored. Students will also be encouraged to create a compendium of their works from 100 level into visually rich portfolios and diary contents (including digital media) for self-branding and future career prospect.

IDC504 Ethics and Professional Practices in Ceramics (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. identify the practical procedural issues involved in setting up ceramic industry; and
2. describe the legislative and ethical issues involved in setting up a ceramic industry working as an independent ceramic practitioner or industrialist.

Course Contents

Practical legislative, ethical and procedural issues involved in setting up a ceramic industry working as an independent ceramic practitioner or industrialist. Entrepreneurial development of students resulting in economic self-reliance and preservation of professional status within the ceramic industry or other related craft or design practices after graduation. Interactive sessions on the protocol of client services management, marketing and appropriation, and protection of intellectual property will be conducted. The course discusses the role of ceramic designers in relevant professional associations at national and international levels.

IDC506 Ceramic Workshop Practices II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate a high level of creativity, craftsmanship and critical thinking in the production processes adopted and the outcomes.

Course Contents

A practical exploration of knowledge and skills acquired on various ceramic forming and decorative techniques to produce a series of functional wares and ceramic prototypes. Students are expected to demonstrate a high level of creativity, craftsmanship and critical thinking in the production processes adopted and the outcomes. Presentation of the deliverables will be subjected to critical evaluation and assessment by the lecturer in charge and a professional expert.

IDC599 Final Year Student's Project (6 Units C: PH 270)

Learning Outcomes:

1. By the end of the final year project, students should be able to evaluate their physical or digital products

Course Contents

The final project is a problem-solving and strategic design project to be proposed and executed by final year students with an outcome in the form of a viable and testable physical or digital product. This must be accompanied by a dissertation documenting the research approach taken from problem identification to the final solution. Work is to be carried out independently by a student and guided by a supervising lecturer.

300 level Fashion Design Option

IDF301 and IDF302 Fashion Drawing and Illustration I and II (4 Units C: PH 180)

Learning Outcomes:

At the end of the course, students should be able to

1. develop the drawing skills to illustrate a Male, Female and a Kid's Fashion Figure.
2. understand the appropriate proportions of human figure as required for garment making,
3. interpret design ideas for creative garment production.

Course Contents

Students will develop skills for drawing and understanding of Fashion figure with appropriate proportions, details and its relation with garment and garment details are essential foundation to go for design process. Develops the drawing skills to illustrate a Male, Female and a Kid's Fashion Figure. Students will also acquire the skill for drawing with accurate proportions and other aesthetic details of Body of a Fashion figure. Drawing body details with different movements, arms, legs, feet, palm, and different positions. Student will gain the knowledge of drawing the technicalities and details of various Fashion elements with the correct Terminologies. Incorporating above elements on a Fashion figure with necessary details to come up with an

appropriate Fashion Illustration. Incorporation of Clothing details and Fashion elements to form a garment such as, types of sleeves, necklines, pockets, cuffs, collars, yokes, waist bands, bows and ties, frills and flounces.

Drawing and Illustration II helps students to develop skills in order to perfectly convey the exact Design idea for all the levels of production through various details and technicalities. Students will develop the exact Fabric in the form of its colour, texture, fall and drape on paper using different colour mediums. Acquire the skill for clothing composition of the fashion figure by adding effects when a garment is worn. Develops the skill for communicating a design for production in the form of "2D flat drawings" of the design.

IDF303/ IDF304 Methods and Materials I and II (4 Units C: LH 60)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate knowledge of materials and equipment required in fashion design;
2. demonstrate effective knowledge of processes and technologies relevant to fashion product designs;
3. identify sewing machine parts; and
4. describe the functions of sewing machine parts with a view to using the equipment appropriately.

Course Contents

A study of the theoretical aspects of the sewing machine and its practical use. The course will cover the study of machine parts and their individual functions. It is aimed at helping students in using the major equipment accurately.

IDF305 Introduction to pattern drafting

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. define pattern drafting and apply terms used in pattern;
2. Explain the use of needed materials for pattern;
3. discuss the principles of different types of patterns drafting; and
4. list different types of patterns drafting; and
5. produce garments of different designs and styles for both male and female of different body shapes using draft patterns.

Course Contents

This course introduces students to the principles and importance of pattern drafting/making. Students will be exposed to the materials needed for pattern drafting such as curves, squares, and measuring tape. Students will be taught different types and application of drafts.

IDF 306 Pattern Drafting

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, students should be able to

1. design a piece of fabric to comply with the curves of the human figure;
2. demonstrate proficiency in pattern drafting to garment production; and

3. produce garments of different designs and styles for both male and female of different body shapes using draft patterns.

Course Contents

Pattern making, the art of controlling and shaping a piece of fabric to comply with the curves of the human figure. It is a major bridge between design and production. In this course, students will be allowed to practically apply their knowledge of pattern drafting under the supervision of an expert. The students are directed to produce draft patterns for different designs and body shapes. By the end of this course, students should be able to produce draft patterns for both male and female styles. They should also be able to mass produce garments using draft patterns.

IDF 305 and IDF 308 Clothing Construction I and II (4 Units C: PH 180)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate basic skills required for the construction of various components of garment; and
2. demonstrate sufficient skills in cutting, stitching and finishing of basic articles of male and female clothing such as dress, shirt, trouser, blouse and skirt.

Course Contents

Practical works to acquire understanding and construction skills for basic garments. Preparation of various components of garments such as plackets, neckline variations, sleeves, pocket pattern making, methods of spreading and folding. Lining, interlining, facing and interfacing. Yokes: - Definition and creating variety in yoke. Empire line and Princess Line. Definition of trimmings and types (Bias trimming, ruffles, embroidery, smocking, faggoting, Appliqué, lace, lace motifs, scalloped edging, decorative fastening belts and bows).

Construction of cuffs and collars, introduction to terminology, fundamentals and basic techniques of draping. Constructing patterns for adult garments (male and female). Practice of developing dress pattern from Draping Technique. Cutting, stitching and finishing of basic articles of male and female clothing such as dress, shirt, trouser, blouse and skirt.

IDF307 Digital Fashion Design I

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate the use of computer software in rendering fashion design in 3D.
2. develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms.

Course Contents

Conceptualisation of three-dimensional textile and fashion forms through freehand to the use of software packages to develop the sketches into three-dimensional forms. The courses students to effectively use the computer in rendering their works in three dimensions and to provide students with the opportunities to develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms.

ENT 312 Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoT)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes, Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

400 level Fashion Design option

IDF 401 Fashion Drawing and Illustration III (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. develop drawing skill for rendering different fashion accessories for male and female meant for various categories of occasions;
2. use the learnt skill to create mood boards, client boards, swatch boards and colour boards in such as a way to enhance customer's easy identification of the theme-based concepts; and
3. develop computer aided garment sketches in coloured illustrations.

Course Contents

Students will expand the skill to draw and render different fashion accessories used by men and women. Develop and introduce categories of clothing that are meant for a specific occasion. Creating Mood boards, theme-based concepts, Client boards – in relation to the end customer and customer identification, Swatch boards – swatch sizes, fabric information and its swatch layouts and colour boards – its emphasis and importance in presentation. Computer aided flat sketches – garment sketches in coloured Illustration and flat sketches with stitch detail.

IDF 403 Digital Fashion Design I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. develop drawing skill for rendering different fashion accessories for male and female meant for various categories of occasions;

2. use the learnt skill to create mood boards, client boards, swatch boards and colour boards in such as a way to enhance customer's easy identification of the theme-based concepts;
3. develop computer aided garment sketches in coloured illustrations; and
4. develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms using appropriate computer software.

Course Contents

Students will expand the skill to draw and render different fashion accessories used by men and women. Develop and introduce categories of clothing that are meant for a specific occasion. Creating Mood boards, theme -based concepts, Client boards – in relation to the end customer and customer identification, Swatch boards – swatch sizes, fabric information and its swatch layouts and colour boards – its emphasis and importance in presentation. Computer aided flat sketches – garment sketches in coloured Illustration and flat sketches with stitch detail.

IDF405 Fashion Merchandising and Advertising (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. explain the concepts of marketing and merchandizing; and
2. describe processes of marketing and merchandizing with respect to fashion products.

Course Contents

Introduction to Merchandising, Fashion Marketing, Role of Merchandiser, product development and product cycle. Types of merchandising. Channels of Distribution. Promotional activities of government and organizations. Domestic and Export Market Environment, International Market Environment. Buyers and Sellers Meet. Costing – Basic Costing, importance, types, merits and demerits; Domestic and Export Pricing, merits and demerits. Advertising- scope, importance, types, merits and demerits; sales promotion, personal selling. Retail management.

IDF IDF407 Fashion Design Studio I (3 Units C: LH 15; PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. develop creative ideas through the application of the knowledge of fashion illustration, fashion photography; and
2. explore pattern drafts and draping skills to create fashion collection.

Course Contents

Creation of an original fashion collection consisting of no more than five pieces (including accessories) incorporating fashion illustration fashion photography to produce the collection. Development of pattern drafts and making use of draping skills to express students' creative ideas. Mood boards must be presented along with sketches for the fashion collection.

IDD 409 Research Methods and Techniques in Industrial Design (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain scientific research methods and methodology; and
2. explore scientific enquiries into observed problems with a view to solving them.

Course Contents

This includes general theoretical concepts of conducting scientific research as well as formal and logical methods of writing. Use of library and reviewing literature will be examined. Methods of conducting pilot study and preparing a thesis proposal and thesis writing will be considered.

IDF402, 404, 406 SIWES

(15 Units C: PH 675)

Students are expected to work during the Industrial Training in the Industries that are related to their areas of fashion design. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participations are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by departmental supervisors before they are presented formally. Assessment is made on individual presentation.

500 level Fashion Design

IDF 501 Fashion Design Studio II

(3 Units C: LH 15; PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explore creative ideas through the application of the knowledge of fashion illustration and fashion photography; and
2. create original fashion look book.

Course Contents

Creation of an original fashion look book consisting of no more than four looks (certain pieces and accessories can be repeated). Students must incorporate fashion illustration and fashion photography skills to produce the look book. Students are given creative freedom to choose preferred themes, fabrics and colour schemes. Mood boards and sketches must be presented along with fashion look book.

IDF 502 Fashion Design Studio III

(3Units C: LH 15; PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explore creative ideas through the application of the knowledge of fashion illustration and fashion photography; and

2. create original fashion look book.

Course Contents

Continuation of **IDF 501**. Creation of an original fashion look book consisting of no more than four looks (certain pieces and accessories can be repeated). Student must incorporate fashion illustration and fashion photography skills to produce the look book. Students are given creative freedom to choose preferred themes, fabrics and colour schemes. Mood boards and sketches must be presented along with fashion look book.

IDF503 Fashion Merchandising and Advertising

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe the know-how of setting up small scale and medium scale fashion industry;
2. demonstrate competence in managing small scale and medium scale fashion industry; and
3. promote merchandising in small scale and medium scale fashion industry.

Course Contents

Feasibility study on how to set up small scale and medium scale textile industry. Productive planning, economic use of materials, labour and machinery, costing and staff management. Prices and advertising procedures appropriate for textile merchandising. The various aspects of planning, purchasing, allocation and promotion of merchandise. Students will understand the importance of professionalism, effective communication and critical reasoning for achieving results in textiles and textile related industries. The Nigerian textile industry and other factors that can improve merchandising and market will be examined.

IDF 504 Fashion Photography, Portfolio Design and Exhibition (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. gain mastery of the use of different photographic equipment including the use of computer software in photography; and
2. develop various skills in photography for different fields.

Course Contents

Principle of Photography, Indoor Photography, Lighting Techniques. Photography Techniques and Equipment for different fields, Modelling in Newspaper, Magazines, Occasions and Fashion Shows. Camera Definition, Parts of Camera, Classification and types of Camera, Applications. Photography using Digital Cameras, Video Photography, Image Mixing, Application of Computers in Photography. Printing Techniques. Outdoor photography and Lighting Techniques. Comparison of outdoor photography with Indoor Photography.

IDF 505 Ethics and Professional Practice in Design

(2 Units C: LH 30)

Learning Outcomes

1. identify the practical procedural issues involved in setting up a fashion industry; and

2. describe the legislative and ethical issues involved in setting up a fashion industry working as an independent fashion designer.

Course Contents

Studies on how to set up small-scale enterprises in Fashion and Textiles will be embarked upon. Interactive sessions on the protocol of client services management, marketing and appropriation will be conducted.

IDF 506 Fashion Accessories and Surface Ornamentation (2 Units; C) (PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate different techniques of making fashion accessories; and
2. explore creative knowledge in adding interesting decorative elements on the surface of fabrics.

Course Contents

This course will expose students to a new aspect of fashion different from the garment production process they have been exposed to. Students will be taught how to make fashion accessories such as bags, caps and shoes to complement sewn garments. Surface ornamentation is the decorative art used on the surface of garments which makes garments more attractive and beautiful. Students will be taught how to decorate fabrics by adding elements of interest such as sequins, beads, threads, tubes, wires and buttons among others

IDF 599 Final Year Student's Project

(6 Units C: PH 270)

Students carry out independent research in either textile arts, textile design, fashion design or interior design in which they, demonstrate knowledge gained throughout the year of study. Work can be based on any aspect of textile design, fashion design, interior design, discovery of dyes from plants, pigment ink, coating agents, development of software and construction of simple textile equipment.

300 level Glass Technology option

IDL301 Properties and application of glass (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. define glass and glass transition temperature;
2. identify types of glass based on their chemical composition; and
3. explain various performance properties of glass that makes it suitable for specific applications.

Course Contents

Definitions of Glass. Glass Transition temperature. Types of glass based on their chemical composition. Physical properties of glass. Mechanical properties; strength, elasticity hardness, density and specific gravity. Thermal properties; thermal endurance, thermal conductivity, heat capacity and specific heat capacity. Various applications of glass in electrical and electronic

devices, medicine, science laboratory, packaging, building and construction. Optional properties; detractive and absorptive properties. Electrical properties, electrical conductivity of glass, dielectric properties, viscosity, surface tension. Chemical properties; the chemical durability of glass diversification.

IDL303 Glass raw materials, analysis and Processing methods (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify different types of glass raw materials; and
2. explain methods of analysing glass raw materials and different processing routes of glass.

Course Contents

Classification of glass raw materials into glass formers, fluxes, network modifiers, colourants and decolourants and refining agents. Methods of analyzing glass raw materials. Processing methods of glass including solid state and liquid state techniques.

IDL305 Techniques of Casting, Flame working and Glass blowing I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate casting of glass forms, flame working of glass tubes and glass blowing; and
2. demonstrate practical steps involved in casting of glass forms, flame working of glass tubes and glass blowing.

Course Contents

Casting glass forms. General laboratory flame working practice. Safety precautions fabrication of laboratory glasswork examples are: Funnels, test tubes, pipettes. Techniques for the individual laboratory glasswork; warming outing cane and slabs, clearing pre-heating, positioning rods and accessory tool handling. The free-blowing team "shop" stem preparation for goblet production.

IDL307 Batch calculation Methods**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. explore different methods of calculating glass batch using the chemical compositions of any given glass raw materials;
2. describe the basic requirements of raw materials suitable for glass batch; and
3. explain batch handling and preparation method.

Course Contents

Batch calculation methods; arithmetical approximation, method of simultaneous equation, computerized batch calculation, supplementary information relating to glass composition and batch calculations. Provision of basis for evaluation of raw material; introducing raw or modified batches into the operation; taking samples for control analysis. Batch handling and preparation method.

IDL302 Computer Applications in Glass Technology**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. develop basic rendering concepts with respect to innovative modelling techniques in three-dimensional glass forms; and
2. use of the computer for numerical and analytical modelling and simulation in glass technology.

Course Contents

Introduction to principles of personal computer usage related to glass technology. Lectures, demonstrations and assignments to emphasize the application of computer in glass technology. Computer modelling and simulation in glass.

IDL304 Glass Melting Furnace, Refractories, Fuels and Fuel Economics (2 Units C: LH 15; PH 45)**Learning Outcomes:**

At the end of the course, students should be able to:

1. identify different types of glass-melting furnaces;
2. identify raw materials for the production of refractories;
3. describe different classifications and properties of refractories;
4. explain corrosion of refractories due to frequent contact with molten glass and glass defects as a result of refractories inclusions due to corrosion; and
5. demonstrate knowledge of furnace construction.

Course Contents

General description of glass melting furnaces. Discontinuous furnace (day tanks and pot furnaces). Continuous glass furnaces. Regenerative furnaces. Recuperative furnaces. Electric

melting consideration in furnace design construction. Refractories, properties and testing. Classification of refractories. Principles of refractory manufacture, slip laws and concepts. Corrosion of refractories. Glass defects through refractories inclusions. Theory governing combustion calculations. Coal carbonization, coke. Solid and liquid fuel combustion. Injectors and electric heating.

IDL306 Glass ceramics and Specialty Glasses (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the types, properties and applications of dense and porous glass-ceramics as well processing techniques involved in the development of dense and porous glass-ceramics; and
2. explain types, properties and applications of specialty glasses.

Course Contents

Definition and historical development of glass-ceramics as a new field of technology. Development and properties of glass-ceramics. The significant applications of glass-ceramics. Processing of glass-ceramics. Conversion of glass to microcrystalline ceramic. Crystallization and devitrification. Nucleation and crystallization of glasses. Nucleating agents. Porous glass-ceramics. Definition of specialty glasses. Types of Specialty glasses. Processing of specialty glasses. Applications of specialty glasses.

IDL308 Surface Design in Glass (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify various methods surface design in glass; and
2. demonstrate the use of various design techniques for embellishing surface of glass products.

Course Contents

Practical works on various methods of surface design in glass including etching, de-silvering and painting, mosaic design, sandblasting and stained glass.

ENT 312 Venture Creation (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;

8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy*. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations

in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

400 Level Glass Technology option

IDL401 Industrial Flat Glass Manufacturing Process (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify different methods of glass manufacturing processes; and
2. explain different methods of flat glass manufacturing processes as obtainable in the glass industry.

Course Contents

Flat glass manufacturing process; sheet glass Foucault method, Pittsburgh processes, lof-colbum method. Plate glass. Bithorax semi-continuous casting, PPG ring roll Process continuous horizontal rolling and polishing operations. Patterned glass manufacturing processes. Float glass. Hand production processes where applicable.

IDL403 Thermal, Compositional and Structural Effects in Glass (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. Describe the relationships between the composition of glass and thermal history during glass melting and their resultant effects on the structure and properties of glass.

Course Contents

Relationship of properties to thermal history, composition and structure of glass such as viscosity, surface tension, density and specific gravity chemical durability, electrical properties, optical properties, mechanical properties and their relationship to glass structure.

IDL405 Technical Drawing (Glass Furnace) (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate skills on technical drawing of different types of glass furnaces and furnace accessories; and
2. explore the use of computer software such as AUTOCAD for drawing glass-furnaces and furnace accessories.

Course Contents

Set projects on industrial glass furnaces in Nigeria, furnaces for container glass, both regenerative and recuperative. Day tank furnaces. sheet glass furnaces; Auxiliary furnaces burners machine parts and tools. Forming machines and moulds.

IDL407 Techniques of Casting, Flame working and Glass blowing II (2 Units C: PH 90)

Continuation of practical works started in IDD307.

IDD409 Research Methods and Techniques in Industrial Design (2 Units C: LH 30)**Learning Outcomes:**

At the end of the course, students should be able to:

1. explain scientific research methods and methodology; and
2. explore scientific enquiries into observed problems with a view to solving them.

Course Contents

General theoretical concepts of conducting scientific research as well as formal and logical methods of writing. Use of library and reviewing literature will be examined. Methods of conducting pilot study and preparing a thesis proposal and thesis writing will be considered.

IDL402, 404, 406 SIWES**(15 Units C: PH 675)**

Students are expected to work during the Industrial Training in the Industries that are related to their areas of glass technology. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participations are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by departmental supervisors before they are presented formally. Assessment is made on individual presentation.

500 Level Glass Technology option**IDL501 Glass Laboratory Practices****(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. identify various devices suitable for use in characterization of glass raw materials and glasses; and
2. demonstrate various characterization techniques to determine physical, mechanical, thermal, mineralogical and microstructural properties of glasses.

Course Contents

Techniques for Materials Characterization. Physical, mechanical, thermal, mineralogical and microstructural characterizations. International standard of measuring water absorption, bulk density, porosity, compressive strength, flexural strength, thermal conductivity, X-ray

Fluorescence (XRF), X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM) and optical microscopy.

IDL503 Fibre glass and Composites

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. Explain the properties, applications, processing and manufacturing techniques of fibre glass; and
2. Explain the properties, applications, processing and manufacturing techniques of glass composites and glass-fibre reinforced composites.

Course Contents

Definition of fibre glass. History of discovery of fibre glass. Types, properties and applications of fibre glassing aerospace, telecommunications, building and construction. Processing and manufacturing techniques of fibre glass. Definition of composites. Classification of composites. Glass and glass-ceramic matrix composites. Glass-reinforced plastics (GRP) and glass-fibre reinforced plastic (GFRP). Applications of GRP and GFRP in automotive industry, aerospace industry, packaging, military protective equipment, building and construction.

IDL505 Primary Sensors for Glass Industry

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify different primary sensors in glass industry; and
2. explain primary sensors as temperature and radiation sensitive devices used in measuring the furnace atmosphere during heat treatment of glass.

Course Contents

Temperature measuring devices; thermocouple, radiation pyrometers, total radiation, spectrally selective optical and two-colour pyrometers. Thermometers; gas liquid and resistance thermometers. Thermistors, pyro metric cones. Flow measurements; orifice plate, flow nozzle, venturi tube, laminar flow element, pilot tube. Variable area, Turbine and magnetic flow meters pressure transmitters and strain gauges.

IDL502 Glass Workshop Practices

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explore creative ideas for development of glass and glass-based products suitable for exhibition using various practical techniques the students have learnt previously.

Course Contents

Creative and exploratory efforts based on the application of the knowledge of IDL307, IDL 308 and IDL407 for the development of glass and glass-based products suitable for exhibition.

IDL504 Management, Marketing and Exhibition (2 Units C: LH 30)**Learning Outcomes:**

At the end of the course, students should be able to:

1. employ different online and offline media for the promotion of brands and sale strategies; and
2. create a compendium of their works from 100 levels into visually rich portfolios and diary contents (including digital media) for self-branding and future career prospect.

Course Contents

Concepts of management and marketing with respect to glass industry. Basic knowledge required to set up small scale and medium glass industry. Organisation and management of glass industry, use of equipment and how to manage and repair them; marketing strategies of finished products. Acquainting of students with the various methods and appropriate ways of conducting business with glass products generally. Exhibition of glass products.

IDL506 Ethics and Professional Practices in Glass Industry (2 Units C: LH 30)**Learning Outcomes:**

At the end of the course, students should be able to:

1. identify the practical procedural issues involved in setting up a glass industry or glass laboratory; and
2. describe the legislative and ethical issues involved in setting up a glass laboratory, working as an independent glass designer or technologist.

Course Contents

This course shall serve as a forum to discuss and prepare for the concern of the professional world. Emphasis is placed on the portfolio refinements, presentation skills, interviewing strategies and professional practice involving money management, self-employment, set up of cottage industry, off site production and other related issues.

IDD599 Final Year Student's Project (6 Units C: PH 270)

At the beginning of the final year, a student is allowed to select topics in glass technology which shall be approved and carried out under supervision of a lecturer. The student will be required to prepare a project report. There should be an attempt to improve on existing knowledge in literature.

Graphics and Communication Design Option

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate knowledge of visual communication (graphics) in the concepts of design elements and principles, putting into cognizance functional and aesthetic parts of the creative design process;
2. demonstrate competency and knowledge in drawing, design research, concept development, computer aided designs, model making, design theories and thinking, project management, and complete product development targeted at both local and global markets;
3. demonstrate knowledge and skills for professional and strategic business practices in the fields of Visual and Communication Design; and
4. demonstrate advanced knowledge for innovative approach and multi-faceted applications of concepts and skills for digital product development, processes, and sustainable use of materials, tools and techniques to develop relevant creative solutions with adequate understanding and consideration for context and culture.

300 level Graphics Design option

IDG301 Drawing- Quick Sketches (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate competencies in drawing of human figure and figures in action; and
2. produce drawings that show realistic representation of human anatomical features during movement.

Course Contents

Still life studies of various compositions with special emphasis on shape, structure, rhythm and special organization. In addition, at least two completed sketch books must be submitted at the end of the course. Comparative studies of still life objects with the means of revealing the explicit and implicit intents in the drawing of the arrangement of inanimate objects the challenges of rendering solid objects should be addressed and emphasis should also be given to two- and three-dimensional planes. Figure drawing, figures in action. Standing seated and reclining male and female models. The nude models, clothed figure to demonstrate fold. Students at this level are being prepared to understand the anatomical study of the movement of the body. To know something about bones, muscles and the tissue of the body, the size, the functions, the weight and texture of what to draw. The inter-relationship of the parts of the body to each other must be learnt to give room for correct proportional approach to figure drawing. Students at this level are expected to be more précised and thorough in their approach the figure drawing.

IDG302 Illustration I and II**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. observe, analyse and appreciate anatomical details, proportions, shape, forms and character of the human figure both in the nude, semi-nude, and clothed posture; and
2. develop illustrations from the previous knowledge of figure drawing using non erasable media such as pen, charcoal, electronic graphic tab.

Course Contents

Figure drawing (human or animal) with special focus on anatomical rendition which will be in relation to objects or the environment: in addition, drapery and physical expressions, foreshortening and perspective studies from human or animal poses will be studied keenly. Drawing from human figure the students will be able to visually observe, analyse and appreciate anatomical details, proportions, shape, forms and character of the human figure both in the nude, semi-nude, and clothed posture. Medium of expression at this level will usually be permanent or non-erasable medium.

IDG303 Advertisement Design and Methods I**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. explain the principles and strategies involved in advertising a product; and
2. discuss legal and ethical considerations involved in advertising a product.

Course Contents

Much emphasis is placed on advertising art/design, product promotion strategies, financial and legal framework, environmental interpersonal and ethical values in outdoor, electronic, print advertising, and marketing.

IDG304 Advertisement Design and Methods II**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate competencies in advertising products using graphics media; and
2. develop advertisement projects for various products.

Course Contents

Development of specific house styles and colours and direct mail advertising including greeting cards, stationery, shopping bags among others. advanced tasks in publicity, press advertisements, posters, calendars, logo and monograms. Intensive instruction will be given on the exploration of business and marketing practices necessary for a successful career in the advertising profession. Students will carry out projects on advertising, publications and multimedia design with emphasis on their visual impact and communication.

IDG305 /306 Photography and Motion Pictures I and II (4 Units C: PH 180)

Learning Outcomes:

At the end of the course, students should be able to:

1. gain mastery of the use of different photographic equipment including the use of computer software in photography;
2. develop various skills in photography for different fields; and
3. demonstrate competencies in development of animation projects.

Course Contents

Historical development of conventional and digital photography (photographic time-line), photography as science and art. The conventional and digital camera and its components. Introduction to basic working knowledge of the photographic process, material, equipment, chemicals and other dark room activities i.e., development of the printing of films. The field of depth. Students at this stage are expected to learn about the types of photography and the purpose of photography. Comparative analysis of the digital cameras as a photographic tool and the human eye. In camera movement the students are expected to address and understand the issues of; physical movement, effects of movement, practical uses of movement and side effects of movement in relation to human beings and environment. Finally, students are expected to record images either in panoramic or single views which they will process in the darkroom and print out as product. Brief introduction to the principles of animation will be taught, with basic practical exercise and group projects.

IDG307 Design for Digital Interfaces and UI/UX (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe visual web design as it relates to enhancing usability / utility and all-round user experience;
2. create mock-ups or wire frame using image editing software;
3. transform wireframes into a functional website; and
4. develop graphic interfaces suitable for use on digital platforms including web pages and mobile applications.

Course Contents

The web graphic design module will involve learning to create sketches showing the overall flow of each page and understand the theory behind image placement, font choices, and other elements that will contribute to the look of web pages and drive user engagement. The module also will explore and conduct exercises on how to design and place elements on digital platforms; determine web page architecture. Students will learn to create mock-ups or wireframe using image editing software and to transform wireframes into a functional website.

This module will focus on exploring the main principles and approaches for effective web design. The study will approach visual web design as it relates to enhancing usability / utility and the all-

round user experience. It will conduct exercises on improving websites outlook: layout, fonts, and images. It will teach students to create aesthetically pleasing websites.

Continuation of Design for Digital Interfaces and UI/UX I; Students will also learn to edit images that are used on digital platforms, which can involve: resizing and cropping images, correcting colours, and ensuring that images are correctly formatted and optimized for mobile and desktop web browsers.

IDD308 Typography and General Printing Process (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. summarize the history of printmaking;
2. explore various printing techniques in producing a number of printed projects; and
3. demonstrate creative ability in the use of varieties of relevant computer application software for printing.

Course Contents

History of printmaking as well as printing technology is taught in this course. Emphasis is on theoretical and practical explorative study. Students are to be exposed to the materials and the principles and techniques of Printmaking (relief, intaglio, etching). Students will be exposed to practical methods (i.e. relief, offset lithographic, gravure, screen, stencil printing.) of placing images on material. Study of large format digital printing and offset lithography. Topics include posters, outdoor and indoor promotional items, book publishing, computer aided typesetting among others. Students develop a working knowledge of the key computer application software for lettering communication and pictorial illustrations. Topic includes the various computer-driven methods of publishing (Desktop publishing). More exercises on creative scenic composition in printmaking will be explored.

ENT 312 Venture Creation (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy* and many more. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict

Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

400 Level Graphics option

IDG401 Drawing Composition and Illustration I

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. develop drawing compositions on various themes consisting of human figures, animated and inanimate objects;
2. develop landscape drawings demonstrating the knowledge of different perspectives; and
3. develop illustrations with emphasis on gestures of animated images.

Course Contents

Figure drawing, drapery and physical expressions, fore-shortening and perspective studies from human poses and three-dimensional objects. Landscapes study with focus on perspective, linear perspective, and aerial perspective, angular and parallel perspective in landscape drawing example: elliptical law of perspective which comprises of aerial view recession, optical illusion, curvilinear, rectilinear, visual reality and illusionism. Study on Gestural Illustrations, the gestural drawings could dovetail into preliminary illustrations for animated images.

IDG403 Computer Generated Imagery and Animation

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. develop computer generated images; and
2. demonstrate competencies in the use of relevant computer software for creating animation and cartoons which can be appropriately used for educative and advertisement purposes among others.

Course Contents

Use of editing software and concepts in the computer. Interactive and practical exercises on the production process which is expected to expose the students to how cartoons are made. Interactive and practical exercises to expose the students to the production processes in animation; how to illustrate on cells sheets, recording the illustrations, transferring into a computer, running the film, use of software applications to actualize animation on a computer and finally the application of animation to; advertising film, public relations and propaganda

IDG403 Film Production and Editing**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate competencies in the use of film production and editing skills; and
2. explore graphic design techniques suitable for use in television and other media productions.

Course Contents

The creative process of composing motion pictures and the related digital aspects. Students' film production projects should be encouraged to involve the use of digital photographic applications. Students will be expected to work on real life collaborative projects that will help them interact across disciplines and the industry particularly the photo and film industry. Set Design techniques in Television and other media production processes will be explored. This will include the creation of sets for photographic and motion picture scenarios. Students will be encouraged to have a working understanding of the various materials needed for set construction and composition.

IDG407 Principles and Issues in Graphic Design**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. develop creative ideas to solve contemporary problems affecting the field of graphic design; and
2. demonstrate effective visual communication skills focusing on finding design solutions to issues that are relevant to contemporary design culture.

Course Contents

This course explores contemporary issues in Visual Communication Design such as technological, theoretical, cultural, social, political and economic issues affecting the field of graphic design, in particular. Students analyze the current state of the field of graphic design as a means of visual communication to employ effective design solutions for issues and topics relevant to contemporary design culture. Contemporary advertising production issues and methods are explored through hands-on projects, presentations, and visits to professional sites. Picture montage, casing for consumer products, wrapper designs and 3-dimensional prototype construction. Other advanced designs and reproduction skills, modern industries. Emphasis is on studio practice and project completion. Students develop confidence in project handling skills through actively supervised studio activities.

IDD409 Research Methods and Techniques in Industrial Design (2 Units C: LH 30)**Learning Outcomes:**

At the end of the course, students should be able to:

1. describe scientific research methods and methodology; and
2. explore scientific enquiries into observed problems with a view to solving them.

Course Contents

This includes general theoretical concepts of conducting scientific research as well as formal and logical methods of writing. Use of library and reviewing literature will be examined. Methods of conducting pilot study and preparing a thesis proposal and thesis writing will be considered.

IDG 402, 404, 406 SIWES

(15 Units; C; PH 675)

Students are expected to work during the Industrial Training in the Industries that are related to their areas of graphic design. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participations are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by departmental supervisors before they are presented formally. Assessment is made on individual presentation.

500 Level Graphics Design option

IDG 501 Drawing Composition and Illustration II (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. develop drawing compositions on various themes consisting of human figures, animated and inanimate objects;
2. develop landscape drawings demonstrating the knowledge of different perspectives; and
3. develop illustrations with emphasis on gestures of animated images.

Course Contents

Complex work on figure drawing, drapery and physical expressions, fore-shortening and perspective studies from human poses and three-dimensional objects. Landscapes study with focus on perspective, linear perspective, and aerial perspective, angular and parallel perspective in landscape drawing, such as elliptical law of perspective which comprises of aerial view recession, optical illusion, curvilinear, rectilinear, visual reality and illusionism. Study on Gestural Illustrations, the gestural drawings could dovetail into preliminary illustrations for animated images.

IDG 503 Advanced Photography

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to

1. demonstrate expertise in creative editing and photo archiving;
2. gain mastery of the use of photo enhancing tools; and
3. demonstrate competencies in the application of complex photography skills with emphasis on creation of various effects accompanied with the use of computer software in photography.

Course Contents

Exercise in picture taking (analogue and digital) creative editing and photo archiving. The use of light and light related gadgets in picture taking. Mastery of the use of photo enhancing tools in the following areas: Brightness, Contrast, Colour, (hue, value and saturation) cropping and resizing. Exploration of various effects used in photography, example: face setting, elongation, panorama picture taking and stitching. At the course, students are encouraged to express themselves via an exhibition and the critique of their works.

IDG 503 Product Packaging and Branding

(3 Units C: PH 135)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify various traditional and modern techniques of showcasing finished products and projects;
2. analysis of problems and solutions of visual production, preservation and presentation; and
3. explore principles and elements of design, photography, illustrations, computer applications in graphic design, advertisement and marketing in branding and packaging of products.

Course Contents

This course teaches the various traditional and modern techniques of showcasing finished products and projects. Designing, finishing, packaging and presentation of graphic products and multimedia projects are the focus of this course. Students will be exposed to techniques such as framing, mounting, hanging, assemblage, suspension, mimicking, leaning, coupling, flood lighting illumination. Two dimensional representations, sequential analysis with photography, combined with sound recording, chart diagram and other visual materials in conference halls, studios, stage, exhibition halls, event centres are core. Analysis of problems and solutions of visual production, preservation and presentation as well as the use of other artistic tricks and improvisation as techniques for visual design presentation are also encouraged.

IDG504 Editorial Graphics and Press Advert

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. summarize the history of the art, craft and type design and typeface psychology;
2. state functions of illustration and problems inherent in relations to various reproduction techniques in books, periodicals, industrial / technical publications, cartooning and animation;
3. explore techniques of rendering editorial lettering and illustrations in pen, ink colour and wash media; and
4. demonstrate creative use of various graphic design skills learnt previously as well as competencies in the use of computer software for publishing magazines, books and varieties of publications.

Course Contents

The module employs a project-based learning approach that addresses design, digital content creation and communication through typography and editorial graphics and enhanced employability skills in the editorial designs for television, billboard, newspaper and magazine

centre-spread, cover design, printing and advertisements. History of the art, craft and type design as well as typeface psychology will be taught. Theoretical framework on various editorial design concepts such as cartooning, copy-fitting, propaganda, captioning, advertising and journalism. Techniques of rendering editorial lettering and illustrations in pen, ink, colour and wash media. Typography as a specialized occupation, arrangement of type (point size, tracking, kerning, leading among others) and typesetting. Typography in the digital age. Creation and modification of typefaces using a variety of graphics artwork illustration techniques for editorial graphics. Intensive work on the structural layout of magazine and newspaper editorial designs. Functions of illustration and problems inherent in relations to various reproduction techniques in books, periodicals, industrial / technical publications, cartooning and animation. Lawn techniques, pen, brush wash, charcoal poster. Use of computer software for publishing. Instruction is given on the principle and preparation of fascinating designs and art work for illustration in newspapers, magazines, television and technical publications.

IDG 505 Marketing, Management and Exhibition

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. employ different online and offline media for the promotion of brands and sale strategies; and
2. create a compendium of their works from 100 levels into visually rich portfolios and diary contents (including digital media) for self-branding and future career prospect.

Course Contents

Entrepreneurial development of students resulting in economic self-reliance and preservation of professional status within the graphics, multimedia art or technology or other craft and design practices after graduation is the specific objective of this course. Study and mastery of tools, materials and accessories for practical considerations in preparing designs for production and enterprising possibilities are also taught. This course is hinged on the final year (500level) students' exhibition activities which involve sorting, arrangement and display of selected paper-work assignments and construction projects in spaces allocated to each final year student. It teaches the professional and ethical way of arranging and mounting and the general overview of two- and three-dimensional exhibits. The general overview with respect to adequate application of the elements and principles of graphic display i.e. quality and organization of exhibits, colour scheme fascination, balancing act in terms of size and weight of exhibits, unity, emphasis and focal direction, judicious utilization of space with note-taking on quantity.

IDG 506 Ethics and Professional Practice in Design

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify the practical procedural issues involved in setting up a graphic design studio; and
2. describe the legislative and ethical issues involved in setting up a graphic design studio, working as an independent graphic designer.

Course Contents

Professional responsibility following the forms set up by graphic designer and multimedia creator. Set-up and operations of the graphic or multimedia designers' office and the procedures

connected with the execution of projects in graphics and multimedia. The focus of this subject is the exploration of the various entrepreneurial possibilities available in the graphic design, graphic arts, crafts domain, and multimedia technology. Practical legislative, ethical and procedural issues involved in setting up graphic outfits or working as an independent art and design practitioner or multimedia technologist.

IDG 599 Final Year Student's Project (6 Units C: PH 270)

This module expects students to carry out independent research projects in visual communication design (Graphics) and Multimedia Technology. Students here are expected to demonstrate knowledge gained throughout their years of study. These researches can be service, or product based in any aspect of graphics, communication arts or multimedia technology.

300 Level jewellery Design option

IDM 301 Jewellery Design Techniques I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify basic tools used in the workshop;
2. describe basic jewellery/metal forming techniques; and
3. demonstrate competencies of the knowledge of different jewellery making techniques.

Course Contents

Workshop function. Use of tools. Basic forming techniques. Handling of precious metals. Introduction to jewellery processes, sawing, filing and sanding, etching, polishing, engraving among others. chains, tubing and hinges, Metal inlay. Students shall be exposed to metals working techniques such as casting, forging, annealing, normalizing, carburizing, reviewing, stamping and so on.

IDM 302 Jewellery Design Techniques II (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. draw sketches as motif for different repeat patterns;
2. describe enamelling process; and
3. develop jewellery products using different jewellery/metal forming techniques.

Course Contents

Enamelling. Filigree. Production of cast Jewellery. Construction and assembly of sets of Jewellery. Processes; chasing and repousse. Applique. Exercises on extraction, and adaptation of motif from natural and artificial objects for application on surface of jewellery and metals. Making thumbnail sketches for jewellery design. The sketches will be adapted as motif for different repeat patterns. This course will include presentation of different colour scheme for approval.

IDM 303 Metal Smithing I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. demonstrate the preliminary knowledge of metal smithing; and

2. explore different fabrication and finishing techniques involved in metal smithing

Course Contents

Construction, fabrication and finishing of steel, aluminium copper and its alloys. Planishing, raising, hollowing and general beaten metal work.

IDM304: Metal Smithing II**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate competencies in metal smithing skills.

Course Contents

Forge work. Tool-making. Drawing down. Metal construction and assembly scroll work.

IDM 305 Theory of Metals I**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. summarize history of metals;
2. describe the basic metallurgy of noble metals; and
3. explain workshop methods and processes involved in the treatment of metals.

Course Contents

History of metals. Basic metallurgy of noble metals, iron, aluminium, copper and its alloys. Workshop methods, Processes; etching, lacquering, embossing, chemical and mechanical treatment of metals.

IDM 306 Theory of Metals II**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. identify different types of metals;
2. demonstrate competence in alloy calculation; and
3. explore different assaying and colouring processes in relation to metals.

Course Contents

Alloy calculation. Identification of metals. Assaying. Processes; hardening, tempering, normalizing, enamel and colouring of metals.

IDM 307 Enamel and Lustre**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. identify the materials used in enamelling;
2. describe processes of enamelling; and
3. discuss lustre application and techniques.

Course Contents

Introduction to the process of enamelling on metals. This medium is viewed in its historic context and applied to the individual student's personal focus in metals and jewellery. Emphasis is placed on contemporary uses and interpretation. Tools, materials and enamels application will be discussed. Other topics like cloisonné, champlevé, prique-a-jour, Limoges, graffito, use of foils and metal technique for fabrications as they apply to enamels and enamelling. Pickling solution, metal adhesives, files, wool, tongs, enamelling/forks, enamelling rocks, tweezers sand glass trays are necessary tools. Emphasis must be placed on types and application of the enamels on various designs. Lustre's application and its techniques are emphasized.

IDM 308: Foundry Practice

(2 Units; C; LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe moulding, melting and casting techniques used in foundry workshop; and
2. demonstrate moulding, melting and casting techniques used in foundry workshop.

Course Contents

Sand casting. Cores, core prints and core boxes. Sand moulding; green / damp sand moulds and skin dry mould. The furnace and melting techniques.

ENT 312 Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy

and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy among others*. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government, Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

400 level Jewellery Design option

IDM401: Jewellery Workshop Practices I

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify colour as an element of design, through evolving exercise in creative use for various patterns and symbols; and
2. explore creative ideas for the development of jewellery products.

Course Contents

This course expounds the role of the metal and jewellery designer, provides the students with knowledge on the various types of metals and jewellery (surface): structural and applied. With more emphasis on the applied design. This will include furnishing design, engraving and embroidery. This course will focus on development of concepts for jewellery and metal design through exercises in basic repeat patterns on paper. Identifying and exploring colour as an element of design, through evolving exercise in creative use for various patterns and symbols

IDM403: Welding and Soldering Technique (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. differentiate between right- and left-hand welding techniques;
2. identify types of welding techniques; and
3. demonstrate competencies in the use of different welding and soldering techniques.

Course Contents

Welding and soldering such as right- and left-hand welding techniques. Types of welding techniques such as arch/ gas welding and their applications. Soldering and soldering techniques. The composition of solder, types of soldering, soldering copper, electric, soldering, soldering furnace, prepare touch, Bunsen burner, fluxes and its types.

IDM 405 Computer Aided Design (Jewellery) (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. translate 2-dimensional computer-aided design and 3-dimensional digital models into real objects using appropriate CAM software and application systems such as 3D printing; and
2. demonstrate the application of computer in metal and jewellery design.

Course Contents

Introduces students to principles of personal computer usage related to metal and jewellery design professions. The work of network operating systems, digital manipulation of scanned images, 2D drafting and 3D modelling to communicate jewellery-oriented forms. Use of a computer as tools is presented. Lectures, demonstrations and assignments to emphasize the application of computer in metal and jewellery design.

IDM 407 Lapidary and Gemmology (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify the types and properties of gemstones;
2. explain gem cutting terms and classification; and
3. develop gemstone products.

Course Contents

Introduction to gemmology and gem. Identification, gem species, varieties and formation. Gemstone hardness and wear ability. Guide to gem cutting terms and classification.

**IDD 409 Research Methods and Techniques in Industrial Design
LH 30)**

(2 Units C:

Learning Outcomes:

At the end of the course, students should be able to:

1. describe scientific research methods and methodology; and
2. explore scientific enquiries into observed problems with a view to solving them.

Course Contents

This includes general theoretical concepts of conducting scientific research as well as formal and logical methods of writing. Use of library and reviewing literature will be examined. Methods of conducting pilot study and preparing a thesis proposal and thesis writing will be considered.

IDM402, 404, 406 SIWES

(15 Units; C; PH 675)

Students are expected to work during the Industrial Training in the Industries that are related to their areas of metal design. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participation are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by departmental supervisors before they are presented formally. Assessment is made on individual presentation.

500 Level Jewellery Design option

IDM501 and IDM502: Jewellery Workshop Practices II and III (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe various jewellery/metal surface embellishment techniques; and
2. demonstrate competencies in the application of surface embellishment techniques on jewellery/metal products.

Course Contents

This course shall cover the application of surface enrichment techniques of jewellery and metal design. Techniques such as pickling, etching, heat treatment of surface and other advance techniques such as forging, enamelling, advance stone setting, chasing and responses shall be studied.

IDM503: Trophy and Metal Design

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe the principles of metal design and fabrication; and
2. explore the principles and processes of trophy and metal design and fabrication for making practical projects.

Course Contents

The principles of metal design and fabrication of products by casting shall be emphasized. Items such as gongs, shields, plaques and buckets, using casting processes such as sand casting, investment, shell methods of casting and other advanced methods shall be encouraged.

IDM504: Cutlery and Coin Design (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the principles and processes of cutlery and coin production;
2. identify patterns of designing cutlery and coins; and
3. explore cutlery and coin design and production.

Course Contents

The principles of cutlery production such as fork, spoons and many more. Processes in manufacturing, patterns of designing such as engraving, repoussé, filigree. Silver wares, copper wares. However, emphasis shall be on decoration principles such as tapping, chasing, aesthetics and functionality. The principle and production of coins using method of stamping or pressing and casting shall be emphasized. Metals such as copper, silver, nickel and the alloys, the composition of coinage be explained. Drawing and Illustrations of products must be produced.

IDM 505 Ethics and Professional Practices in Metal/Jewellery Design (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify the practical procedural issues involved in setting up a jewellery/metal industry; and
2. describe the legislative and ethical issues involved in general practices as an independent jewellery/metal designer.

Course Contents

The course serves as a forum to discuss and prepare for the concerns of the professional world. Emphasis is placed on the portfolio refinements, presentation skills, interviewing strategies and professional practice involving money management, self-employment, studio set up, off-site production and other related issues.

IDM 506 Management, Marketing and Exhibition (2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. employ different online and offline media for the promotion of brands and sales strategies; and
2. create a compendium of their works from 100 level into visually rich portfolios and diary contents (including digital media) for self-branding and future career prospect.

Course Contents

Organisation and management of metal product. Use of equipment and how to manage and repair them; marketing strategies of finished products. Acquainting students with the various methods and ways of conducting business with metal product and goods generally and techniques of presentation of metal products like mounting and lamination. Exhibition of metal products.

IDM 599 Final Year Student's Project (6 Units C: PH 270)

At the beginning of the final year, a student is allowed to select topics in metal which shall be approved and carried out under supervision of a lecturer. The student will be required to prepare a project report. There should be an attempt to improve existing techniques and designs.

300 Level Textile Design Option**IDT 301: Drawing and Illustration I (2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. create illustrations of fully clothed life figures in different postures with emphasis on draperies and creases of various clothing materials worn by the model; and
2. demonstrate the skill for clothing composition of the fashion figure.

Course Contents

Drawing of clothed figures in action: walking, running reclining kneeling from life models and printed materials. The course covers draperies of various clothing materials on human body; gowns, trousers, head gears, caps, footwear and the sorts, aim to develop skills in order to perfectly convey the exact Design idea for all the levels of production through various details and technicalities. Students will develop the exact Fabric in the form of its colour, texture, fall and drape on paper using different colour mediums. Acquire the skill for clothing composition of the fashion figure by adding effects when a garment is worn. Develops the skill for communicating a design for production in the form of "2D flat drawings".

IDT 302: Introduction to Textile Science (2 Units C: LH 30)**Learning Outcomes:**

At the end of the course, students should be able to:

1. describe the processes involved in fibre, yarn and fabric manufacture;
2. identify methods of identification of fibres;
3. determine colour fastness;
4. describe basic textile terminologies, textile production processes and properties of different types of textile materials;
5. identify textiles' physical properties tests; and
6. demonstrate the determination and interpretation of textiles' physical properties.

Course Contents

Basic understanding of fibre, yarn and fabric manufacture. Study of the nature of materials. Structure and properties of fibre forming polymers. Textile processing, bleaching and mercerisation. Chemical methods of identification of fibres, analysis of blends, estimation of damage to fibre materials, determination of amount of size and filing material in fabrics. Understanding of colour fastness: fastness to washing, light, perspiration, crocking, gas fading and other parameters of assessing dye quality. Introduction to textile testing. Moisture relations in textiles, fibre testing (length, fineness, maturity), yarn testing, strength of textile materials. Fabric testing. Standards and specifications. Fibre and fabric failures and detection. Physical property tests: strength, abrasion resistance, crease recovery, stiffness, drapability, static charge,

thermal conductivity, air permeability, water repellence, thickness, shrink resistance, pilling resistance. Methods of determining the physical properties and interpretation of test results.

IDT 303 Textile Design (2 Units C: LH 15; PH45)

Learning Outcomes:

At the end of the course, students should be able to:

1. describe the roles of textile designers in the industry, recognize different types of textile designs and know the application of design element in textile design;
2. explore principles of design to create textile designs; and
3. produce prototype designs for wrappers, shirt prints and other types of prints.

Course Contents

Provides students with the knowledge of the role of textile designer; various types of fabric surface designs (structural and applied). Emphasis will be on applied design such as furnishing, wrapper, shirt, dress, java, and madras designs. Fabric design concept development through classroom exercises in basic repeat patterns on paper. Colour exploration is paramount as an element of design. Intensive paper work to develop in students a creative approach in fabric design techniques, synthesis and application of design theories: paper to fabric procedures and processes in furnishing, wrapper, shirt prints, java prints among others. Making of thumbnail sketches and colour roughs of motifs suitable for adoption in repeat patterns. Exercises expose students to various techniques to produce prototypes of fabric surfaces which can be fashioned to an end use.

IDT 304 Methods and Materials in Textiles (2 Units; C; LH 15; PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. classify textile fibers based on their structures, properties, spinning and fabric construction processes; and
2. determine the fiber content and fiber size of fabric samples through simple fiber tests.

Course Contents

Textile processes from fiber to fabrics. Fiber classifications by their structures and properties and processes of yarn production as well as fabric construction; Fiber tests for identification, determination of fiber size and composition in fabric samples and fabric reactions. Principles and techniques in textile design; design format; development of design elements and techniques of colour /motif manipulation. Technical information on fabric decoration processes, materials and techniques such as screen printing, photographic transfer and block printing.

IDT 305 Dyeing and Printing in Textiles I (2 Units; C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. summarize history of resist dyeing and printing in Africa with emphasis in Nigeria;
2. identify different dyes, and dye classifications;
3. demonstrate extraction and adaptation of motifs from natural and artificial objects for tie – dye, batik and other dyeing processes; and

4. produce designs on different types of textile materials using the appropriate type of dyes and dyeing/printing techniques.

Course Contents

This course exposes students to dye, and dye classifications. The concept of dyeing with more emphasis on resist dyeing: materials and methods of dyeing. History of resist dyeing and printing in Africa with emphasis in Nigeria. Exercises on extraction and adaptation of motifs from natural and artificial objects for tie – dye, batik and other dyeing processes using starch, plangi, tritik and wax for students' skill development.

IDT 306 Dyeing and Printing in Textiles II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. produce printed textile designs using different methods of printing; and
2. demonstrate the use of most appropriate printing paste/pigments for different types of textile materials.

Course Contents

The course also exposes students to printing and printed textiles. History of printing in Africa with emphasis in Nigeria. Techniques in printing, their origin and processes such as block printing roller printing, silk screen printing rubber hand cut stencil print, positive and negative process. Effects and faults of modern printed textiles. Colour fastness on fabrics. Exercises on extraction and adaptation of design ideas from natural and artificial objects for printing, classifying printed textile designs, design size, repeats and colourways. Practical studio work in various printing (block printing, screen printing, rubber hand cut stencil printing).

IDT 307 Woven and Constructed Textiles I (2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain weaving terminologies, different types of weaves and basic weaving processes;
2. develop drafting and lifting patterns for weaving;
3. produce woven fabrics using simple looms like Inkle loom and four-corner loom.

Course Contents

A practical exposure of different varieties of cloth construction to students. Designs and related technical terminologies such as warp, weft, ends, picks, weave, design, repeat of design draft, peg plan and denting plan. Woven structure; plain, twill, sateen and satin and their derivatives. Preparatory processes – winding, warping, sizing, drawing in principles and objectives of sizing, sizing materials. Recipes and methods of size preparation. Looming, faults and wastes in warp tying and drawing in process. Classifications of weaving machines. Practical introduction to shedding, beating up, take - up and let - off mechanisms. Weaves and their drafts. Introduction to graph paper drafting for patterns.

IDT 308: Woven and Constructed Textiles II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. design draft and lifting plan for advance weaving patterns for table/floor looms with four or more shafts;
2. calculate the number warp yarns needed for different length of fabrics putting into consideration the Dents per Inch (DPI) of the reed; and
3. produce woven fabrics on table and floor looms using different types of weaves.

Course Contents

Continuation of Weaving Techniques I. Deformation of warp and tension in shedding, calculation of shaft movement. Picking and checking – picking mechanisms, principles of checking wells design and its influence. Selvedge mechanisms and selvage formation. Interplay of colour and weave designs (drafts and lifting plans) shown in graph paper designs

ENT 312 Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy among others*. Digital Business and E-Commerce Strategies).

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

400 Level Textile Design option

IDT 401 Drawing and Illustration II

(2 Units C: PH 90)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the importance of fashion; and
2. demonstrate creativity in the use of drawing tools to create detailed drawings of clothed human figures.

Course Contents

Detailed studies of advanced clothing in relation to human body. Drawing from models and stylizing the drawing with clothing. Studies on economic, technological, aesthetic, educational and psychological importance of fashion.

IDT 403 Computer Applications in Textile Design**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate mastery of software packages to develop design and fashion sketches into three-dimensional forms; and
2. develop three-dimensional models using appropriate software packages.

Course Contents

Conceptualization of three-dimensional textile forms through freehand to the use of software packages to develop the sketches into three-dimensional forms. The course enables students effectively use the computer in rendering their works in three dimensions and to provide students with the opportunities in developing basic rendering concepts with respect to innovative modelling techniques in three-dimensional forms.

IDT 405 Textiles Construction and Manufacturing Processes**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. explain tools, machines and processes used for fabric manufacturing from fibre stage to the finished product;
2. explore techniques involved in fabric construction and produce fabrics from fibres; and
3. construct different types of looms.

Course Contents

Gaining practical understanding of the various methods, materials and machineries involved in the production of woven and non-woven textiles. Exploration of the techniques involved in the conversion of fibre into yarn, then yarn into fabric with reference to common types such as weaving, knitting, bonding and felting. Production of fabrics directly from the fibres. Development of loom, types and parts of looms. Applications of woven and nonwoven products.

IDT 407: Colour Chemistry and Textile Technology**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. explain the chemical properties of colours, classification of dyes, and dyeing mechanisms; and
2. describe quality control procedures in the textile industry.

Course Contents

Historical survey of colouring matters in nature. Chemistry, properties of dyes and pigments. colour and chemical constitution. Excitation and colour. Classifications of dyes and fibres. Dyeing mechanisms. Preparation and dyeing of natural and synthetic fibres. Colour fastness properties

and other parameters of assessing dye quality. Quality control procedures and colouration industry.

IDD 409 Research Methods and Techniques in Industrial Design (2 Units; C; LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain scientific research methods and methodology; and
2. explore scientific enquiries into observed problems with a view to solving them.

Course Contents

General theoretical concepts of conducting scientific research as well as formal and logical methods of writing. Use of library and reviewing literature. Methods of conducting pilot study and preparing a thesis proposal and thesis.

IDT 402, 404, 406 SIWES

(15 Units; C; PH 675)

Students are expected to work during the Industrial Training in the Industries that are related to their areas of textile design. This is to enable them come in contact with facilities that are essential to their training and are not in the classroom. It is expected that students' activities and participations are assessed by the Industrial Based Supervisors. Students are expected to report on their industrial activities adequately in the log-books. Proper method of reporting, using appropriate industrial languages and terminologies will be required. The students are to write a formal report on their activities during the 6 months Industrial Training. The technical report has to be formally written, supervised and corrected by departmental supervisors before they are presented formally. Assessment is made on individual presentation.

500 Level Textile Design option

IDT 501 Technical Textiles I

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the fibre content and fabric structures of textiles for technical end uses; and
2. describe zero waste in the clothing industry and new applications and functions of eco-textiles.

Course Contents

Technical Textiles – Introduction, definition, classification, applications & end uses. Raw materials within technical textiles. Fabric structures for technical end uses. Performance textiles (survival, sports, recreation, fire resistant, water repellent, textiles), material durability. Industrial textiles - Introduction, General properties and end uses. Zero waste in fashion. Recycled fibres and fabrics. Fibres from alternate sources and biomass of crab and shrimp shells. New applications of silk, Fibres produced by bacteria, new functions for cellulose. Eco textile accessories.

IDT 502 Technical Textiles II**(2 Units C: LH 30)****Learning Outcomes:**

At the end of the course, students should be able to:

1. state the properties and end uses of Smart textiles and Geo textiles; and
2. explain the environmental impact of textile production, textile waste and waste treatment.

Course Contents

Geo textiles –Introduction, General properties and end uses. Medical textiles – Introduction, General properties and end uses. Smart textiles - Introduction, general properties and end uses. The complexity of defence and military wear. Textile composites. Textile products lifecycle. Textile waste and waste treatment. Environmental impact of textile production.

IDT 503 Dyeing and Printing in Textiles III**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. explain textile colour theory, application and interpretation;
2. identify different printed and dyed textiles using various media;
3. transfer paper work design on fabrics;
4. explore dyeing and printing techniques; and
5. develop mastery in the production of dyed and printed textiles using advanced dyeing and printing techniques.

Course Contents

Continuation of Dyed and Printed Textiles II. Fabric colouration, application and interpretation. Effects and defaults of modern printed textiles. Design and production of printed and dyed textiles using various media. Translation of paper work designs into textiles. Studio work involving tie-dye, clamp, tritik and batik.

IDT 504 Combined Reproduction Techniques**(2 Units C: PH 90)****Learning Outcomes:**

At the end of the course, students should be able to:

1. demonstrate creativity in the combination of different surface decoration and fabric construction techniques in textile design towards a particular function; and
2. explore mix approach method to produce finished textile products.

Course Contents

This is a creative and skill enhancement course. Students are offered an opportunity of using mix media approach in the execution and production of textile design products. Acquired knowledge in printing, dyeing and weaving techniques are directed towards a particular function. Focus is on mix approach and conversion of produced textile design into a finished product. Practical exercise will be taking in garment making, furnishing interior decorative items.

**IDT 505: Textile Management and Marketing and Exhibition
LH 30)**

(2 Units C:

Learning Outcomes:

At the end of the course, students should be able to:

1. explain the importance of marketing in the textile industry; and
2. identify marketing strategies suitable for different textile products and factors that can improve textile merchandising and marketing.

Course Contents

Introduction to Merchandising, Fashion Marketing, Role of Merchandiser, product development and product cycle. Types of merchandising. Channels of Distribution. Promotional activities of government and organizations. Domestic and Export Market Environment, International Market Environment. Buyers and Sellers Meet. Costing – Basic Costing, importance, types, merits and demerits; Domestic and Export Pricing, merits and demerits. Advertising- scope, importance, types, merits and demerits; sales promotion, personal selling. Retail management. Feasibility study on how to set up small scale and medium scale textile industry. Productive planning, economic use of materials, labour and machinery, costing and staff management. Prices and advertising procedures appropriate for textile merchandising. The various aspects of planning, purchasing, allocation and promotion of merchandise. Students will understand the importance of professionalism, effective communication and critical reasoning for achieving results in textiles and textile related industries. The Nigerian textile industry and other factors that can improve merchandising and market will be examined.

IDT 506 Ethics and Professional Practice in Design

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. identify the practical procedural issues involved in setting up a textile/fashion outfit; and
2. explain the legislative and ethical issues involved in general design practices and setting up a textile/fashion outfit.

Course Contents

Studies on how to set up small-scale enterprises in Fashion and Textiles will be embarked upon. Interactive sessions on the protocol of client services management, marketing and appropriation will be conducted. The course serves as a forum to discuss and prepare for the concern of the professional world. Emphasis is placed on the portfolio refinements, presentation skills, interviewing strategies and professional practice involving money management, self-employment, studio set up, off site production and other related issues.

IDT599: Final Year Student's Project

(6 Units C: PH 270)

At the beginning of the final year, a student is allowed to select topics in textile design which shall be approved and carried out under supervision of a lecturer. The student will be required to prepare a project report. There should be an attempt to improve existing techniques and designs. Students carry out independent research in either textile arts, textile design, fashion design or interior design in which students demonstrate knowledge gained throughout the year of study.

Work can be based on any aspect of textile design, fashion design, interior design, discovery of dyes from plants, pigment ink, coating agents, development of software and construction of simple textile equipment.

Minimum Academic Standards

Equipment

Ceramic Option: Throwing wheels (manual and electric), Firing Kilns (Electric, Gas, Wood), Test Kilns, Clay Mixers, Pug mills, Ball Mill, Jar Mill, Blunger, Weighing Scales, Jiggering and Jollying Machines, Glaze Sprayer and Booth, Dryers, Modelling Stands, Extruders, Brick Making Machine, Slab rollers, Shelves, Heat-transfer machine, 3D Printers, computer sets and other essential equipment.

Glass Option: Blowpipes, Torches, Glass Rolling Machine, Working Tables and Stools, Glass Melting Furnaces, Annealing Furnaces, Jacks, Paddles, Shears, Moulds, Marvers, Benches, Crimps, Safety glasses, Punty, Blocks, Gas cylinders, propane gas regulator, computer sets and other essential equipment.

1. **Textile Option:** Equipment required include Design Tables, Stools, Sewing Machines and Accessories, Looms and Accessories, Large Printing and drafting tables, pattern making tools, Dress Forms, Cupboards, Computer Assisted Design (CAD) tools, computer sets and other essential equipment, digital embroidery machine,
2. **Graphic Option:** Computer sets, Graphic design applications, Graphics tablet and stylus, Digital Camera, Direct Image Printers, Large format printer, Lithographic printing machine, 3D Printer, monitor calibrators, External hard drives, drawing materials, Donkeys, Working table, Stools and other essential equipment.
3. **Metal/Jewellery Option:** Jewellery Pliers & Side Cutters, Anvil & Bench Peg, Jewellers Saw Frame & Blades, Jewellers Cutters, Soldering Block, Gas Torch, Tweezers, Tribblet, Rawhide Mallet, Files & Sanding Sheets, moulds, core and sand, Furnaces, Polishing Papers, Crucibles, Furnaces, Bandsaw, Rammers, Bellows, Gaggers, shovel, computer sets and other essential equipment.
4. **Fashion Option:** Sewing machines, sewing accessories, pattern design tools, pattern making tools, dress making dummies, pair of scissors, draping tools, pressing board, pressing iron, drafting tables, fabrics, computer-assisted design tools, computer sets and other equipment.

Staffing

Academic Staff

This should be in the ratio of one academic staff to eight students, where a department has up to six areas of specialization each area should have at least two lecturers at the senior category. This number should be increased where there are postgraduate programmes.

In order to prevent the practice of indigenous arts and crafts from becoming extinct; traditional craftsmen should be invited to the university for short periods as Artist-in-Residence. It is expected that this will enable them to transfer their skills to younger generation.

Library

Each Faculty/School should be provided with fully equipped library and information technology centre with computers and Internet connectivity and quick reference books, periodicals, journals and audio-visual materials. Such library and information resources will be additional to the University central library facilities

Classroom, Laboratories, Workshops, and Offices

1. Spaces

For the good administration of the Industrial, designs adequate facilities should be provided for each section of the department.

Space recommendations

	Space	Use	Minimum (m ²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

2. Studio/Workshop/laboratory spacing and facilities

(i) Ceramic studio/workshop/Laboratory: Hand building workshop, slip casting workshop, press casting workshop, throwing workshop, plaster workshop, Electric kilns room, Kiln shed, Glaze laboratory, spraying booth, Screen printing room, 3D printing room, Fabrication workshop, Lecture Room, gallery.

(ii) Textile & Fashion studio/workshop/Laboratory: Screen printing room, dyeing workshop, sewing room, embroidery and knitting studio, Fashion studio, wood workshop, weaving studio, , Lecture Room, gallery

(iii) Jewellery/Metal studio/workshop/Laboratory: Enamelling laboratory, casting workshop, hammering and machining workshop, welding, brazing, cutting and grinding workshop, chemical room for etching, anodising and patterning, finishing workshop, , Lecture Room, gallery

(iv) Glass studio/ workshop/Laboratory: Hot glass workshop, Cold process workshop, Electric Furnaces room, Gas Furnace Shed, Materials characterization laboratory, Free blowing workshop, surface design workshop, Chemical laboratory, , Lecture Room, gallery

(v) Graphic studio/workshop/Laboratory: Printmaking studio, photography / darkroom studio, printing studio, Editing studio, Lithography workshop, Digital media workshops, TV production studio, Computer room, , Lecture Room, gallery

B. Sc. / B. Tech. Quantity Surveying

Overview

Quantity Surveying is traditionally concerned with cost and financial management aspects in the procurement of building, infrastructure, and heavy and industrial engineering projects. However, new developments have occurred in the construction sector within the last two decades. These include increased use of information communication and technology (ICT), increased use of visualisation in construction leading to the development of building information modelling (BIM), augmented virtual reality (AVR) and Internet of Things (IoT). There is a growing need for and involvement of quantity surveyors as construction project managers and project leaders, construction arbitrators, construction procurement advisers and sustainable construction advisers, facilities management advisory services, among others. These developments necessitate the need for a complete revision of the benchmark minimum professional standard for the training of the future graduate quantity surveyors. This standard of training will enable the products to be re-positioned to contribute to national development, add to the construction procurement value-chain, maintain a competitive edge and play critically needed leadership roles in the built environment and other related sectors of the economy.

Philosophy

The philosophy of the Quantity Surveying degree programme is to produce graduates with theoretical base and practical skills necessary to effectively plan and control project funds and to be able to function in any new and emerging areas of the profession.

Objectives

The objectives are to:

1. produce graduates with the necessary theoretical understanding of the concepts of cost, price and value, and the ability to produce and analyze cost information with a view to applying them to decision making;
2. provide an effective balance between theoretical education and practical industrial training;
3. produce graduates that will be able to provide technical, managerial, and financial services to building, civil engineering infrastructures, industrial and heavy engineering projects both in the public and private sectors of the economy;
4. produce graduates that will be able to proceed to specialized areas of Quantity Surveying, leading to teaching, research, and development; and
5. produce graduates that will become innovators and leaders, responding to unfamiliar situations and solving problems by applying their knowledge, competencies and skills with imagination in a multi-disciplinary environment.

Employability Skills

The Quantity Surveying Programme is designed with employability prospects of the graduates in mind. The following are some key employability skills embedded in the programme: proficiency in Building Information Modelling (BIM) usage, computerized measurement of construction and engineering works, computer-based estimating, and ICT skills. Computer – based cost planning and project cost control, construction and project management Skills, construction contract management skills, procurement management skills and construction commercial management

skills. It is envisaged that if the graduates of the programme possess the afore-mentioned skills, it will enhance their employability both nationally and internationally.

21st century skills

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Unique features of the programme

1. it is closely aligned with the core competencies and mandatory competency requirements of the Royal Institution of Chartered Surveyors (RICS) as well as the Test of Professional Competencies requirements of the Nigerian Institute of Quantity Surveyors (NIQS).
2. In addition, the programme makes provision for sound theoretical underpinning and practical skills development.
3. it makes provision for supervised Students' Industrial Work Experience (SIWES).
4. the production of graduates who already have industrial experience prior to graduation, thus increasing the prospects of their graduation employability both locally and internationally.

Admission and Graduation requirements

Admission Requirements

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English Language, Mathematics, Physics and any other two subjects from Chemistry, Technical Drawing, Geography, Economics and Biology, in not more than two (2) sittings

Direct entry admission: candidates who fulfil the requirements for UTME admission and who have obtained General Certificate of Education (GCE), Advanced Level; Higher School Certificate (HSC)/Interim Joint Matriculation Board (IJMB), JUPEB or other approved equivalent qualifications in two relevant subjects may be admitted into the 200 level. Candidates who have obtained National Diploma (ND), at least an upper credit, in addition to fulfilling the requirements for UTME admission may be admitted to 200 level. Candidates who have obtained Higher National Diploma (HND), at least an upper credit in addition to fulfilling the requirements for UTME admission may be admitted to 300 level.

Graduation requirements

To qualify for graduation, such students should have passed a minimum of 150, 120 and 90 credit units, for UTME, ND/GCE (A level) and HND direct entry respectively, including all compulsory courses. The duration of surveying and geo-informatics programme is minimum of ten (10), eight

(8) and six (6) academic semesters for UTME, ND and HND direct entry respectively and the maximum of fifteen (15), twelve (12), and nine (9) academic semesters for UTME, ND and HND direct entry respectively.

Global course structure

100 level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
MTH 101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary Mathematics II	3	C	45	-
PHY 101	General Physics I	2	C	30	-
PHY 102	General Physics II	2	C	30	-
QTS 101	Introduction to Quantity Surveying	2	C	30	-
QTS 102	Principles of Measurement of Building Works	2	C	15	45
QTS 103	Introduction to Measurement of Building Works	2	C	30	-
QTS 104	Introduction to Tendering and Estimating	2	C	30	-
COS 102	Introduction to Problem Solving	3	C	30	-
	Total Units	22			

200 level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	
ENT 211	Entrepreneurship and Innovation	2	C	15	45
STA 221	Statistical Inference I	2	C	30	-
STA 212	Introduction to Social & Economic Statistics	2	C	30	-
QTS 201	Measurement of Building Works I	2	C	15	45
QTS 202	Measurement of Building Works II	3	C	30	45
QTS 203	Principles of Tendering and Estimating I	2	C	30	
QTS 204	Principles of Tendering and Estimating II	2	C	30	
QTS 205	Introduction to Auto CAD and BIM for Quantity Surveyors	3	C	45	-
	Total Units	20			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	45
QTS 301	Advanced Measurement of Building Works I	3	C	30	45
QTS 302	Advanced Measurement of Building Works II	3	C	30	45
QTS 303	Construction Commercial Management I	2	C	30	-
QTS 304	Construction Commercial Management II	2	C	30	-
QTS 305	Construction Economics I	2	C	30	-
QTS 306	Construction Economics II	2	C	30	-
QTS 307	Introduction to Law of Torts and Building Contracts	2	C	30	-
QTS 308	Introduction to Construction Management	3	C	45	-
	Total Units	23			

400 level

Course Code	Course Title	Units	Status	LH	PH
QTS 401	Civil Engineering Measurement	3	C	30	45
QTS 402	SIWES	15	C	-	675
QTS 403	Advanced Construction Cost Studies and Commercial Management	2	C	30	-
QTS 405	Computer Laboratory Workshop: Application of Quantity Surveying Software & Building Info Modelling	2	C	30	-
QTS 407	Professional Practice and Procedure I	2	C	30	-
QTS 409	Introduction to Research Methods	2	C	30	-
QTS 411	Construction Economics III	2	C	30	-
QTS 413	Construction Project Management	3	C	45	-
	Total Units	31			

500 level

Course Code	Course Title	Units	Status	LH	PH
QTS 501	Measurement of Mechanical, Electrical and Plumbing Installations	3	C	30	45
QTS 502	Procurement and Measurement of Industrial Engineering Works	2	C	45	-
QTS 503	Advanced Construction Economics	2	C	45	-
QTS 504	Public Project Procurement Management	2	C	30	-
QTS 506	Construction Contract and Administration II	3	C	45	
QTS 510	Integrated Quantity Surveying Studio II	2	C	15	45
QTS 511	Integrated Quantity Surveying Studio I	2	C	15	45
QTS 512	Project	6	C	-	270
	Total Units	22			

Course Contents with Learning Outcomes

QTS 101: Introduction to Quantity Surveying

(2 Units; C; LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

gain an awareness and understanding of Quantity Surveying as a profession and its historical development;

1. state the functions of a Quantity Surveyor and the career opportunities available to him/her;
2. express an awareness and understanding of various professionals and professional bodies in the construction industry and the interrelationships of various professionals;
3. evaluate an awareness and understanding of the relationships between the Nigerian Institute of Quantity Surveyors (NIQS) and the Quantity Surveyors Registration Board of Nigeria (QSRBN);
4. demonstrate the knowledge and skill for measuring girths, areas and volumes of regular and irregular shapes as well as setting up dimensions on taking off sheets;
5. illustrate an awareness and understanding of the principles underpinning the measurement and description of construction works using the Building and Engineering Standard Method of Measurement (BESMM);
6. demonstrate the knowledge and skill for setting out descriptions and dimensions in taking off dimensions from drawings;
7. display the knowledge and skills for measuring substructure up to and including ground floor bed for ordinary strip foundation; and
8. Demonstrate an understanding and skill for bill of quantities production from the measured substructure using manual method and MS Excel.

Course Contents

Definition of Quantity Surveying; historical development of the quantity surveying profession. Functions performed by a quantity surveyor. Career opportunities for the Quantity Surveyor. Professionals in the construction industry and their interrelationships. Professional bodies in the construction industry and their significance; the relationships between the Nigerian Institute of Quantity Surveyors (NIQS) and the Quantity Surveyors Registration Board of Nigeria (QSRBN). Applied Mensuration: Measurement and computation of girth, area and volume for both regular and irregular shapes from dimensioned drawings; Principles of measuring gross and adjustments. Setting up dimensions on taking off sheets and squaring to compute girths, areas and volumes.

QTS 102: Principles of Measurement of Building Works (2 Units; C) (LH 30, PH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. gain an awareness and understanding of the principles underpinning the measurement and description of construction works using the Building and Engineering Standard Method of Measurement (BESMM);
2. develop the knowledge and skill for setting out descriptions and dimensions in taking off dimensions from drawings;
3. develop the knowledge and skill for measuring substructure up to and including ground floor bed for ordinary strip foundation; and
4. develop an understanding and skill for bill of quantities production from the measured substructure using manual method and MS Excel.

Course Contents

Principles of measurement and description, using the Building and Engineering Standard Method of Measurement (BESMM), Setting out of description and dimensions in taking off dimensions from drawings. Forms and order of dimension; the use of brackets, &, Add, Ddt, Ditto and Dotting on. Waste calculation and alteration in dimensions. Measurement of substructure up to and including ground floor bed for ordinary strip foundation. Production of substructure bill of quantities using manual method and the use of MS Excel. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction work being measured.

QTS 103: Introduction to Measurement of Building Works (2 Units; C) (LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Understand the evolution of SMM of Construction works;
2. Understand the developments from different editions of SMM up to BESMM4R;
3. Know the philosophy underlying the use of tabulated format;
4. Apply BESMM4R to taking off using standard stationery for manual bill of quantities preparation; and
5. Understand the purpose of bill of quantities.

Course Contents

Standard Methods of Measurement (SMM) of construction works: Evolution of SMM of construction works, development of different editions of SMM and introduction to the use of

Building and Engineering Standard Method of Measurement, Fourth Edition Revised (BESMM4R) in practice. Philosophy underlying the use of the tabulated format; exercises in framing and coding typical descriptions. Introduction to the standard stationery used in manual bill of quantities preparation: taking off sheet, abstracting sheet and billing sheet. The Bill of Quantities: Purposes of the Bill of Quantities (BOQ), manual processes of preparation of the bill of quantities: taking off, squaring, working up and billing – with simple illustrative examples; and an appreciation of a model BOQ. Introduction to the use of MS Excel in BOQ preparation with simple illustrative examples. Types of bill format and their uses. Components of bill of quantities: preamble clauses, Preliminary items, measured items and the use of provisional and prime cost sums.

QTS 104: Introduction to Tendering and Estimating (2 Units; C) (LH 30)

Learning Outcomes:

Students should be able to:

1. Gain an awareness and understanding of the meaning of estimating, the principles and process of estimating;
2. Gain understanding of the types of estimating in construction works and where applicable;
3. Develop the knowledge and skill for estimating all-in rates for construction works;
4. Develop an understanding and skill for obtaining information required for estimating in construction works; and
5. Develop skill in the use of MS Excel to estimate from first principles.

Course Contents

Definition of estimating and tendering; the role of estimator in a construction organisation. Skills required of an estimator. Purposes of estimating; Types of estimating: preliminary estimating, approximate quantities estimating and detailed estimating. Methods of estimating: single rate estimate and range estimate. Obtaining, storing and retrieval of data and information required for estimating.

COS 102: Introduction to Problem Solving (3 Units; C) (PH 30)

Learning Outcomes:

On completion of studying this chapter, you should be able to:

1. Explain concepts related to problem solving and identify problem types;
2. Identify and explain problem solving methods;
3. Exemplify solvable and unsolvable problems;
4. Interpret given problems and formulate solutions to them using flowchart, pseudo code and/or other formalisms;
5. Apply appropriate strategies and procedures to arrive at workable solutions to problems; and
6. Develop critical thinking and problem-solving skills required throughout the computing career.

Course Contents

Introduction to the core concepts of computing, problems, and problem-solving. The identification of problems and types of problems (routine problems and non-routine problems). Method of solving computing problems (Introduction to Algorithms and heuristics). Solvable and unsolvable problems. Solution techniques of solving problems (abstraction, analogy, brainstorming, trial and error, hypothesis testing, reduction, literal thinking, means-end analysis, method of focal object, morphological analysis, research, root cause analysis, proof, divide and conquer). General

Problem-solving process. Solution formulation and design: flowchart, pseudo-code, decision table, decision tree. Implementation, evaluation, and refinement.

GST 111: Communication in English

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. Identify possible sound patterns in English Language;
2. List notable language skills;
3. Classify word formation processes;
4. Construct simple and fairly complex sentences in English;
5. Apply logical and critical reasoning skills for meaningful presentations;
6. Demonstrate an appreciable level of the art of public speaking and listening; and
7. Write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and critical thinking and reasoning methods (logic and syllogism, inductive and deductive argument and reasoning methods, analogy, generalisation and explanations). Ethical considerations, copyright rules and infringements. writing activities: (pre-writing, writing, post writing, editing and proof-reading; brainstorming, outlining, paragraphing, types of writing, summary, essays, letter, curriculum vitae, report writing, note-making, mechanics of writing). Comprehension strategies: (reading and types of Reading, comprehension skills. Information and Communication Technology (ICT) in modern language learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building;
6. analyse the role of the Judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; nationalist movements and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages: usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3Rs – Reconstruction, Rehabilitation and Re-orientation; Re-orientation strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain basic definition of set, subset, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers; algebra of complex numbers; the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II (Calculus) (2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. identify types of rules in Differentiation and Integration;
2. describe the meaning of Function of a real variable, graphs, limits and continuity; and
3. Solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching; Integration as an inverse of differentiation. Methods of integration, Definite integrals. Application to areas, volumes.

PHY 101: General Physics I (Mechanics)

(2 Units C: LH 30)

Learning Outcomes:

On completion, the student should be able to:

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum;
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time; units and dimension, vectors and scalars, differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton laws of motion (inertial frames, impulse, force and action at a distance, momentum conservation). Relative motion, application of Newtonian mechanics; Equations of motion; Conservation principles in physics, conservative forces, conservation of linear momentum, kinetic energy and work, potential energy, system of particles, centre of mass; rotational motion; torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; Circular motion, moments of inertia, gyroscopes and precession; gravitation: Newton's Law of Gravitation, Kepler's Laws of Planetary Motion, gravitational potential energy, escape velocity, satellites motion and orbits.

PHY 102: General Physics II (Behaviour of Matter)

(2 Units C: LH 30)

Learning Outcomes:

On completion, the student should be able to:

1. Explain the concepts of heat and temperature and relate the temperature scales;
2. Define, derive, and apply the fundamental thermodynamic relations to thermal systems;
3. Describe and explain the first and second laws of thermodynamics, and the concept of entropy;
4. State the assumptions of the kinetic theory and apply techniques of describing macroscopic behaviour;
5. Deduce the formalism of thermodynamics and apply it to simple systems in thermal equilibrium; and
6. Describe and determine the effect of forces and deformation of materials and surfaces.

Course Contents

Heat and temperature, temperature scales; gas laws; general gas equation; thermal conductivity; first law of thermodynamics; heat, work and internal energy, reversibility. Thermodynamic processes; adiabatic, isothermal, & isobaric. Second law of thermodynamics; heat engines and entropy. Zero's law of thermodynamics; kinetic theory of gases. Molecular collisions and mean free path. Elasticity, Hooke's law, Young's, shear and bulk moduli. Hydrostatics; pressure, buoyancy, Archimedes' principles; Bernoulli's equation and incompressible fluid flow. Surface tension; adhesion, cohesion, viscosity, capillarity, drops and bubbles.

PHY 107/108: General Physics Practical I & II**(1 Unit C: PH 45)****Learning Outcomes:**

On completion of the course, the Student should be able to:

1. conduct measurements of some physical quantities;
2. make observations of events, collect and tabulate data;
3. identify and evaluate some common experimental errors;
4. plot and analyse graphs; and
5. draw conclusions from numerical and graphical analysis of data.

Course Contents

These introductory courses emphasize quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques should be employed. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat and viscosity, which are covered in PHY 101 and PHY 102. However, emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis and deduction.

STA 111: Descriptive Statistics**(3 Units C: LH 45)****Learning Outcomes:**

Upon the completion of this course, the students should be able to:

1. explain the basic concepts of descriptive statistics;
2. present data in graphs and charts;
3. differentiate between measures of location, dispersion and partition;
4. describe the basic concepts of Skewness and Kurtosis as well as their utility function in a given data set;
5. differentiate rates from ratio and how they are use; and
6. compute the different types of index number from a given data set and interpret the output.

Course Contents

Statistical data: types, sources and methods of collection. Presentation of data: tables chart and graphs. Errors and approximations. Frequency and cumulative distributions, measures of location, partition, dispersion, skewness and Kurtosis. Rates, ratios and index numbers.

**QTS 201: Measurement and Description of Building Works I
LH 30; PH 45)****(3 Units C:****Learning Outcomes:**

1. At the end of this course, students should be able to:

2. Develop the knowledge and skill for measuring more advanced substructure works including non-regular strip foundations, excavation in rock and below ground water level;
3. Develop the knowledge and skill for measuring super structural wall, precast reinforced concrete lintel, in-situ reinforced concrete lintel and roof beam;
4. Develop the knowledge and skill for measuring timber roof construction and roof covering to a domestic type bungalow building; and
5. Develop the knowledge and skill for production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software.

Course Contents

Measurement of more advanced substructure works to include non-regular strip foundations, Excavation in rock and below ground water level. Measurement of super structural wall (external and internal), precast reinforced concrete lintel, in-situ reinforced concrete lintel and roof beam, and timber roof construction to a domestic type bungalow building. Production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured.

QTS 202: Measurement and Description of Building Works II LH 30; PH 45)

(3 Units C:

Learning Outcomes:

At the end of this course, students should be able to:

1. Develop the knowledge and skill for measuring floor, wall and ceiling finishes and adjustment for openings in domestic type buildings;
2. demonstrate the knowledge and skill for measuring doors and windows, including associated ironmongery;
3. illustrate the knowledge and skill for measuring demolition and alteration work to domestic type buildings; and
4. enumerate the knowledge and skill for production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software.

Course Contents

Measurement of floor, wall and ceiling finishes (internally and externally) and adjustment for openings in domestic type buildings; Measurement of doors and windows (including ironmongery); Preparation of door and window schedules. Measurement of Demolition and alteration work to domestic type buildings. Production of bill of quantities for the measured works using manual method; the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured. Group assignment in preparation of bill of quantities for a complete domestic type building.

QTS 203: Principles of Tendering and Estimating I

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Gain an awareness and understanding of the concept of Estimating construction cost, the Estimator and his functions;
2. Develop the knowledge and understanding of the purposes and types of estimates used in construction projects;
3. Develop the knowledge and understanding of the different estimating methods and the processes involved in the detailed estimating method;
4. Gain awareness and understanding of procurement methods and contractual arrangements used in the construction industry;
5. Develop the knowledge and understanding of tendering and tendering process, types of tendering and objectives of tendering;
6. Develop the knowledge and understanding of the role of different parties involved in tendering, nature and types of tender documents; and
7. Develop the knowledge and understanding of the procedure for selecting a suitable contractor and factors for consideration in selection of appropriate contractor.

Course Contents

Definition of estimating. Who is an estimator? Functions of an estimator and requirements of an estimator. Purposes of estimating; Types of estimating: preliminary estimating, approximate estimating and detailed estimating. Methods of estimating: Single rate estimate and range estimate. Processes involved in the detailed estimating method: materials, labour – all-in-rate for labour, plant – all-in-rate for plant, overhead and profit. Processes involved in the detailed estimating method: materials, labour – all-in-rate for labour, plant – all-in-rate for plant, overhead and profit. Introduction to construction procurement and contractual arrangements in the construction industry. Tendering and the tendering process: definition, types of tendering, objectives of tendering, the role of different parties involved in tendering, Nature and type of tender documents: Tendering procedure in selecting a suitable contractor and Factors for consideration in selection of appropriate contractor.

QTS 204: Principles of Tendering and Estimating II

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. Gain awareness and understanding of the difference between an estimate and a tender and the role of tender adjudication;
2. Develop the knowledge and understanding of the importance of construction cost library, its constituents and sources of estimating data;
3. Gain awareness and understanding of the factors impacting the determination of tender sum;
4. Develop the knowledge and understanding of the procedure involved in building up unit rates for building projects and determination of labour constant; and
5. Develop the knowledge and understanding of the procedure for survey of basic prices of construction materials and plant items.

Course Contents

Comparison between estimate and tender, the purpose of tender adjudication, derivatives of cost library for construction works and sources of estimating data: Factors affecting determination of tender sum of construction work. Procedure for estimating unit rates for building projects and determination of labour constants, survey of basic prices of building materials and plant items.

QTS 205: Introduction to Auto CAD and BIM Quantity Surveyors (3 Units C: LH 30; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. Gain awareness and understanding of the various drawing tools available in AutoCAD software;
2. Develop the knowledge and skill for using the AutoCAD software to produce small scale architectural designs;
3. Develop the knowledge and skill for measuring AutoCAD drawings using CAD Measure software; and
4. Develop the knowledge and skill for using Quantity Surveying BIM tools for bill of quantities production and costing of construction works.

Course Contents

Introduction to AutoCAD software; awareness of the various tools in use in AutoCAD software, using the software to produce basic architectural shapes; practical to involve mini architectural designs with production of all drawings using AutoCAD; the link between AutoCAD drawings and CAD measure software. Use of quantity surveying BIM tools for bill of quantities production and costing of construction works. Introduction to NAVIS WORK and other Industry specific software relevant to the Quantity Surveyor.

COS 201: Computer Programming I (3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify different programming paradigms and their approach to programming;
2. Write programs using basic data types and strings;
3. design and implement programming problems using selection;
4. design and implement programming problems using loops;
5. Use and implement classes as data abstractions in an object-oriented approach.
Demonstrate simple exception handling in programmes;
6. Develop programs with input/output from text files; and
7. design and implement programming problems involving arrays.

Course Contents

Introduction to computer programming. Functional programming; declarative programming; logic programming; scripting languages. Introduction to object-orientation as a technique for modelling computation. Introduction of a typical object-oriented language, such as Java. Basic data types, variables, expressions, assignment statements and operators. Basic object-oriented concepts: abstraction; objects; classes; methods; parameter passing; encapsulation. Introduction to Strings and string processing. Simple I/O; control structures; arrays; simple recursive algorithms; inheritance; polymorphism.

Lab work: Programming assignments involving hands-on practice in the design and implementation of simple algorithms such as finding the average, standard deviation, searching and sorting. Practice in developing and tracing simple recursive algorithms. Developing programmes involving inheritance and polymorphism.

ENT 211: Entrepreneurship and Innovation (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, entrepreneurship, opportunity seeking, new value creation, and risk taking;
2. state the characteristics of an entrepreneur;
3. explain and analyze the importance of micro and small businesses in wealth creation, employment, and financial independence
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of entrepreneurship (entrepreneurship, entrepreneurship/corporate entrepreneurship,). Theories, rationale and relevance of entrepreneurship (Schumpeterian and other perspectives. Risk-taking, necessity and opportunity-based entrepreneurship and creative destruction). Characteristics of entrepreneurs (opportunity seeker, risk taker, natural and nurtured. Problem solver and change agent. Innovator and creative thinker). Entrepreneurial thinking (critical thinking, reflective thinking, and creative thinking). Innovation (concept of innovation, dimensions of innovation, change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (basics of business plan, forms of business ownership, business registration and forming alliances and joint ventures). Contemporary entrepreneurship issues (knowledge, skills and technology, intellectual property, virtual office, networking). Entrepreneurship in Nigeria (biography of inspirational entrepreneurs, youth and women entrepreneurship. Entrepreneurship support institutions, youth enterprise networks and environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

GST 212. Philosophy, Logic and Human Existence (2 Units C: LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;

7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

STA 121: Statistical Inference I (3 Units C: LH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. differentiate population from sample as well as point from interval estimate;
2. Be able to test for hypothesis concerning population mean and proportions for large and small samples;
3. Be able to compute regression and obtain the fitted line. Likewise, the computation for correlation coefficient well understood; and
4. Be familiar with the fundamentals of time series analysis.

Course Contents

Population and samples. Random sampling distributions, estimation (point and interval) and tests of hypotheses concerning population mean and proportion (one and two large sample cases). Regression and correlation. Elementary time series analysis.

STA 212: Introduction to Social and Economic Statistics (3 Units C: LH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. Be able to understand the Statistics systems and explain the Nature, types, sources, methods of collection and problem of official statistics;
2. Be able to compute index numbers using the different types;
3. Be able to give an idea about descriptive statistics and Basic principles of probability;
4. Be able to differentiate discrete from continuous random variables considering binomial, normal, t, chi-square, Poisson, other univariate distributions;
5. Be able to explain joint distributions and sampling distributions;
6. Be able to demonstrate central limit theorem;
7. Be able to explain the properties of an estimators and linear combinations of random variables;
8. Be able to explain the basic concept of testing of hypotheses;
9. Be able to understand the socio-economic indicators: nature, types, uses and computation; and
10. Be able explain the nature, sources, contents and problems of official statistics in selected sectors.

Course Contents

Statistics systems. Nature, types, sources, methods of collection and problem of official statistics. Index numbers, theory, construction and problems. Descriptive statistics. Basic principles of probability; discrete and continuous random variables (binomial, normal, t, chi-square, Poisson, other univariate distributions); joint distributions; sampling distributions; central limit theorem; properties of estimators; linear combinations of random variables; testing and estimation; maximum likelihood principle, basics of hypotheses testing. Socio-economic indicators: nature, types, uses and computation. Nature, sources, contents and problems of official statistics in selected sectors.

QTS 301: Advanced Measurement of Building Works I 30, PH 45)

(3 Units; C) (LH

Learning Outcomes

At the end of this course, students should be able to:

1. Develop the understanding and skill for measurement of advanced foundations;
2. Develop the knowledge and skill for measurement of concrete framed structures;
3. Develop the knowledge and skill for production of bills of quantities;
4. Develop the knowledge and skills in the use of Microsoft Excel and dedicated computer software for bill production; and
5. Gain the knowledge and understanding of the form, order and procedure for writing specifications for construction materials in the measured work sections.

Course Contents

Measurement of more advanced foundations: foundations on sloping sites and simple stepped foundation; driven and bored pile foundations, deep raft foundation and underpinning to defective foundations. Measurement of in-situ reinforced concrete framed structure: column bases, columns and beams, suspended slabs, staircases (including balustrade and handrail), concrete flat roof and felting; preparation of reinforcement schedule using MS Excel and measurement of reinforcement and formwork. Production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured. Group assignment in preparation of bill of quantities of a reinforced in-situ concrete framed structure; Introduction to use of preliminary and preamble clauses; Relationship between specifications, drawing and bill of quantities. Form, order and procedure in writing specifications.

QTS 302: Advanced Measurement of Building Works II PH 45)

(3 Units C: LH 30;

Learning Outcomes

At the end of this course, students should be able to:

1. demonstrate the skill for measurement of steel framed buildings and unframed steel structures;
2. display the skill for measurement of proprietary claddings, demountable partitions and suspended ceilings;

3. Develop the knowledge and skill for measurement of furniture, standard joinery unit, wardrobe, kitchen cabinet and shelves;
4. Gain understanding and develop the skill for production of bills of quantities from measured quantities;
5. Develop the understanding and skills in the use of Microsoft Excel and dedicated computer software for bill production; and
6. Gain the knowledge and understanding of the form, order and procedure for writing specifications for construction materials in the measured work sections.

Course Contents

Measurement of steel framed building: steel grillage foundation, steel stanchions, steel beans, steel roof trusses, gusset plates, holding down bolts. Measurement of unframed steel structures and their casings. Proprietary claddings and partitions including curtain walling, demountable partitions and suspended ceilings. Furniture, standard joinery unit, wardrobe, kitchen cabinet and shelves. Production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured. Group assignment in preparation of bill of quantities of a steel framed structure. Writing of preliminary and preamble clauses; Specification writing: Practical approach in specifying building materials and components.

QTS 303: Construction Commercial Management I

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain the knowledge and understanding of how project overheads/ establishment charges are determined;
2. Develop the knowledge and understanding how all-in rate for materials, labour and plant are determined;
3. Gain the awareness and understanding of input resources of materials, labour and plant relevant to excavation and earthworks;
4. Develop the knowledge and skill for building up unit rates for excavation and earthworks section of the Building and Engineering Standard Method of Measurement (BESMM); and
5. Develop the awareness and understanding of methods of pricing: net pricing and gross pricing of construction works

Course Contents

Preparation of estimate. Calculation of project overheads/establishment charges. Establishment of all-in-rate for labour, establishment of all-in-rate for material, establishment of all-in-rate for plant; and building up of unit rates. Identification of input resources: material cost and its components, labour cost and its components and plant cost and its components. Methods of pricing: net pricing and gross pricing. Computation of rates for the items in the following sections of the Building and Engineering Standard Method of Measurement (BESMM). Excavation and earthworks.

QTS 304: Construction Commercial Management II

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop the knowledge and skill for building up unit rates for concrete work, brickwork and block work sections of the BESMM;
2. Develop the knowledge and skill for building up unit rates for roofing, woodwork, metalwork and glazing sections of the BESMM;
3. Develop the knowledge and skill for building up unit rates for floor, walls and ceiling finishing, painting and decoration sections of the BESMM; and
4. Develop the knowledge and understanding of methods for generating schedules of materials, labour and plant in the areas covered in building up unit rates

Course Contents

Computation of rates and preparation of schedule of materials, labour and plant for the items in the following sections of the Building and Engineering Standard Method of Measurement (BESMM): concrete work, brickwork and block work; roofing, woodwork, metalwork, glazing, finishing, painting and decoration.

QTS 305: Construction Economics I

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain the knowledge and understanding of the structure of the construction industry as a sector of the national economy;
2. Develop the knowledge and understanding of the cyclical nature of the construction industry in relation to variation in workload and government regulations;
3. Gain the awareness and understanding of the nature and scope of construction projects;
4. Develop the knowledge and understanding of the factors affecting the supply and demand for landed property; and
5. Develop the knowledge and understanding of the methods of valuation of landed property, including simple calculations and construction and use of valuation tables.

Course Contents

Structure of the construction industry. Variation in workload of the construction industry. Relationship of output of construction industry to available resources. The construction economy, its relation to the national economy. Effect of government actions on the Construction Industry. Functional requirements and cost implications of constructional methods. Economics of building development. Nature and scope of development projects. Factors affecting the supply and demand for landed property. Introduction to the methods of valuation of landed property, including simple calculations. Construction and use of valuation tables.

QTS 306: Construction Economics II

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain the knowledge and understanding of the fundamental concepts in construction economics: estimate, cost, price and value, the concept of value for money;
2. Develop the knowledge and skill for preparing preliminary estimates as well as methods and techniques for preparing approximate estimates;

3. Develop the awareness and understanding of the theories and practice of construction cost planning and cost control;
4. Develop the knowledge and skill for preparation of cost plan and cost control;
5. Develop the awareness and understanding of the use of the outputs of cost plans and approximate estimates; and
6. Develop an awareness and usefulness of current research on the theory and practice of cost planning and cost control in Nigeria.

Course Contents

Review of fundamental concepts in construction economics: estimate, cost, price and value, the concept of value for money. Preliminary estimates, methods of preparing approximate estimates. Theory and practice of construction cost planning and cost control. Cost planning principles and types of cost planning methods. Construction cost data: characteristics of cost data, accuracy and consistency of cost data. Presentation of cost plan and formats. Utilizing the outputs of cost planning and approximate estimates. Analysis of current research on the practice of cost planning and cost control in Nigeria.

QTS 307: Introduction to Law of Torts and Building Contracts LH 30)

(2 Units C:

Learning Outcomes

At the end of this course, students should be able to:

1. Develop the knowledge and understanding of the hierarchy of legal institutions in Nigeria and their functions;
2. Understand the Formation of a contract and different contract types;
3. Develop the knowledge and understanding of the circumstances under which a contract is discharged, breach of contract and remedies for breach of contract; and
4. Develop the knowledge and understanding of the basics on Law of Torts: duty of care, negligence, trespass and damages.

Course Contents

Framework of the Nigerian legal system and structure for administration of justice in Nigeria. Judicial personnel. Elements of the law of contract to include formation of a contract, vitiating factors, discharge of contract, breach and remedies in contract, terms of contract. Introduction to the Law of Torts: the building blocks of the law of torts – duty of care, negligence, trespass, damages.

QTS 308: Introduction to Construction Management

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Understand the inter-relationship of the various professionals involved in the construction industry, professional bodies and trade unions;
2. Develop the understanding and knowledge of construction site planning, health and safety issues on construction sites as well as sustainable disposal of construction wastes;
3. Understanding the principal concept that surround the organisational structures and sizes of different formal construction organisations;

4. Understand and apply construction logistics skill using lean thinking and construction supply chain management protocols; and
5. Develop the knowledge and skill for managing the construction process leading to quality assurance, good record keeping and safe working environment.

Course Contents

Organisation of the construction process – interrelationships between the professionals in the construction industry, trades in the construction industry, professional bodies and unions, sources of key construction materials.

Planning the construction site – layout of construction site, health and safety issues in construction, waste disposal and sustainability issues in construction.

Sizes of construction firms – small, medium and large: classification by annual turnover and number of employees.

Organisational structure – horizontal and vertical organisational structure, matrix organisational structure; organisational structure of construction firms.

Construction logistics – ordering and storing construction materials, lean thinking in construction, supply chain management, plant hiring/ buying, plant inventory management

Managing the construction spection of ongoing construction, testing – quality assurance, progress monitoring, site meetings, minutes of site meetings, site diaries and records; Site safety management.

ENT 312: Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. identify opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct a survey of entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity identification (sources of business opportunities in Nigeria. Environmental scanning, demand and supply gap/unmet needs/market gaps/market research, unutilised resources, Social and climate conditions and technology adoption gap). New business development (business planning, market research). Entrepreneurial finance (venture capital. Equity finance, micro finance, personal savings, small business investment organizations and business plan competition). Entrepreneurial marketing and e-commerce (principles of marketing, customer acquisition & retention, B2B, C2C and B2C models of e-commerce, first mover advantage, e-commerce business models and successful e-commerce companies,). Small business management/family business: leadership & management, basic book keeping, nature of family business and family business growth model. Negotiation and business communication (strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods).

Opportunity discovery demonstrations (business idea generation presentations. Business idea contest, brainstorming sessions, idea pitching). Technological Solutions (the concept of market/customers Solution, customer solution and emerging technologies, business applications of new technologies - *Artificial Intelligence (AI), Virtual/Mixed Reality (VR), Internet of Things (IoTs), block-chain, cloud computing, renewable energy*. Digital business and e-commerce strategies).

GST 312: Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. define the difference between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building

Course Contents

Concepts of peace, conflict and security in a multi-ethnic nation. Types and Theories of Conflicts: ethnic, religious, economic, geo-political conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of conflict and violence in Africa: indigene and settlers' phenomenon; boundaries/boarder disputes; political disputes; ethnic disputes and rivalries; economic inequalities and social disputes. Nationalist movements and agitations. Selected conflict case studies: Tiv-Junkun; Zangon-Kataf chieftaincy and land disputes. Peace building, management of conflicts and security: peace & human development. Approaches to peace & conflict management: religious, government and community leaders. Elements of peace studies and conflict resolution: conflict dynamics assessment scales: constructive & destructive. Justice and legal framework: concepts of social justice. The Nigeria legal system. Insurgency and terrorism. Peace mediation and peace keeping. Peace & security council: international, national and local levels. Agents of conflict resolution: conventions, treaties community policing: evolution and imperatives. Alternative Dispute Resolution (ADR): a) dialogue b) arbitration, c) negotiation d) collaboration. Roles of international organizations in conflict resolution: (a) the United Nations and its conflict resolution organs, (b) the African Union, & its peace and security council (c) ECOWAS in peace keeping. Media and traditional institutions in peace building. Managing post-conflict situations/crisis: refugees. Internally displaced persons (IDPs). The role of NGOs in post-conflict situations/crises.

QTS 401: Civil Engineering Measurement

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain awareness and understanding of the nature and scope of Civil Engineering (CE) works;
2. Develop the knowledge and understanding of the history and development of the Civil Engineering Standard Method of Measurement (CESMM) and the development of Civil Engineering codes alongside the principal changes introduced to the CESMM;
3. Develop the knowledge and understanding of the fundamental principles of measurement based on CESMM;
4. Comprehend the rules guiding the production of civil engineering bill of quantities) BOQ);

5. Apply the principles of measurement to specific CE works;
6. Develop the knowledge and skill for bill of quantities production for the measured works using manual method, the use of MS Excel and dedicated computer software; and
7. Execute the preparation of complete priced bills of quantities through group assignments.

Course Contents

Scope of civil engineering works and method of measurement. Development of Civil Engineering codes of measurements, comparison of Civil with Building and Engineering Standard Methods of Measurements (BESMM). Contents of Civil Engineering bill of quantities and preparation of Civil Engineering bill of quantities. Method related charges, measurement of retaining walls and stabilization of retaining walls. Piling: concrete piles and steel sheet piling. Measurement of estate roads and highways and simple railway works: simple bridges and culverts, simple tunnelling. Drainage, sewage treatment installations. Sea walls, wharves, jetties, cooling towers, pump-house and water pipe lines. Production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured. Group assignment in preparation of civil engineering bill of quantities in areas covered.

QTS 402: SIWES

(15 Units; C; PH 675)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain in-depth understanding of the roles of the Quantity Surveyor in the Construction Industry;
2. Demonstrate a good knowledge and understanding of the documentations involved in the practice of Quantity Surveying;
3. Gain extensive site experience to appreciate the practical aspects of the construction process;
4. Demonstrate a good understanding of how to conduct site meetings and the roles of members of a construction team; and
5. Develop critical skills in the core areas of quantity surveying: measurement and costing of construction works, valuation of work in progress and preparation of material schedule.

Course Contents

This programme is meant to expose students to a combination of field and office experience related to construction activities both in the public and private sectors. It is a period of compulsory, supervised Student Industrial Work Experience Scheme (SIWES), in addition to laboratories/workshop/practical/studio training received during teaching period. The programme is conducted for a minimum period of one semester. It takes place during the second semester of the 400 level of the programme of study. Students are expected to submit a systematic log-book for assessment at the end of the training period. Students with unsatisfactory performance shall be required to repeat the training programme.

QTS 403: Advanced Construction Cost Studies and Commercial Management (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. build up unit prices and analyse rates for all materials required for complex buildings and civil engineering works price preliminary items and day-works for building and Civil Engineering work;
2. prepare subcontract quotations; price temporary works and services for Civil Engineering works and prepare schedule of materials;
3. state the knowledge and skill acquired for using MS Excel and dedicated estimating software in estimating and rate build up;
4. demonstrate the knowledge and skill required for cost/value reconciliation in a construction company;
5. prepare claims for capital allowances on plant and machinery; and
6. explain the requirements for the selection of suitable: construction team, procurement route, tendering method, contractual arrangements, third party right and construction programme.

Course Contents

Computation of rate, preparation of schedule of materials, labour and plant for items in the following sections of the Standard Method of Measurement (SMM): Plumbing installation, electrical installation, civil engineering works and heavy and industrial engineering works.

Pro-rata rates, the use of MS Excel in estimating and dedicated estimating software, adjudication process, estimating of preliminary items and day-works items, preparation of subcontract quotations; bidding strategy; cost/value reconciliation of construction works. Capital allowance: claiming capital allowances on plant and machinery. Due diligence: suitability of construction team, suitability of procurement route, suitability of tendering method, suitability of contractual arrangements; third party right and suitability of construction programme.

QTS 405: Computer Laboratory Workshop (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop the knowledge and understanding of computer hardware and software applicable to Quantity Surveying practice and factors to consider in appropriate selections;
2. Understand and apply Spread sheet Programmes (MS Excel) for computation of unit rates, preparation of BOQs, Preparation of valuations; preparation of final accounts;
3. Develop the knowledge and skill for using dedicated QS software to measure from AutoCAD drawings;
4. Develop the knowledge and skill for using dedicated QS software for measurement and production of Bill of Quantities;
5. Develop the knowledge and skill for using project management software, (MS Project);
6. Develop the knowledge and skill for using dedicated QS Estimating software; and
7. Develop the knowledge and skill for using of BIM tools to perform QS functions such as bill of quantities production, costing, valuation and scheduling.

Course Contents

Computer hardware and software applicable to quantity surveying practice and factors to consider in computer hardware and software selection. Performing quantity surveying calculations using

MS Excel, for computation of unit rates, preparation of BOQs, preparation of valuations, financial reports. Preparation of final accounts, report writing using MS word, PowerPoint presentations using charts and graphs, Use of MS Project and other project management software. Advanced usage of CAD Measure and QS CAD for measurement of AutoCAD drawings. Use of dedicated QS software for measurement and production of bill of quantities such as master bill elite, build soft. Use of dedicated QS software for estimating; Use of Building Information Modelling (BIM) tools for QS functions – quantification, costing, valuation and scheduling. Group assignments and learning tasks to promote peer support in developing the requisite knowledge and skills in software usage.

QTS 407: Professional Practice and Procedure I

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Understand the duties of all parties to a contract and specifically the Quantity Surveyor's role;
2. Understand the responsibility of the professional Quantity Surveyor under the JCT/other forms of construction contract;
3. Understand how claims arise, and how they are resolved;
4. Understand basic procedures and develop the skill for measurement on site of items for variations and for the purpose of interim valuation;
5. Understand the terms Prime Cost and Provisional Sums and their application in construction contract; and
6. Understand the procedure and develop the skill for preparing interim valuation, variation accounts and final accounts.

Course Contents

Introduction to professional practice and procedures: roles of the quantity surveyor during pre-contract and post-contract periods. Mobilisation of contractors to site. Responsibilities of the Quantity surveyor under the JCT/other forms of Contract. Interim payments and certificates, valuation of works based on bill of quantities, preparation of financial statements, preparation of variation accounts; preparation of fluctuation claims. Assessment of loss and expense claims; preparation of sub-contractors' and suppliers' accounts; adjustment of day works account and adjustment of provisional sum and prime cost sum. practical completion and defects liability period.

QTS 409: Introduction to Research Methods

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Understand how to identify and define a research problem and formulate relevant research topic in Quantity Surveying;
2. Develop the knowledge of the sources of related literature and gain the understanding of the strategy for conducting literature review, citation and referencing of sources reviewed;
3. Understand and apply different research designs, approaches to data collection and instruments for data collection;
4. Develop a basic understanding of different sources of data;
5. Apply statistical tools to Quantity Surveying research and draw valid conclusions; and
6. Develop the knowledge and understanding of presentation of written and oral project report.

Course Contents

Research principles and methods. Identifying and defining a research problem. Topic selection and proposal writing; searching and reviewing literature. Citation and referencing in research. Research design, sampling techniques, techniques for data collection and questionnaire design. Data analysis and presentation of results. Drawing conclusions; making recommendations; dissertation structuring and writing up. Presentation of research report.

QTS 411: Construction Economics III (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Understand and apply cost indices and cost analysis as tools for determining preliminary estimate;
2. Develop advanced knowledge and skill for aligning cost plan to preliminary estimate or cost limit;
3. Develop the knowledge and understanding of cost modelling techniques and cost engineering techniques at pre-contract stage;
4. Understand and apply the techniques used in investment appraisal of private developments;
5. Understand and apply the cost/benefit analysis technique used in the appraisal of public developments; and
6. Develop the knowledge and understanding of sources of funds for development, public investment, mortgage financing, development bonds, loans, grants, subsidy and taxation.

Course Contents

Building cost indices and locational indices: principles, build up and uses. Use of cost analysis data and indices in establishing preliminary estimates of future projects. Advanced cost planning and cost control to align cost plan with preliminary estimate or cost limit; cost modelling techniques; cost engineering techniques: cost estimating or assessment methods employed in cost engineering. Effect of Building geometry on construction cost; development economics: aims of private developers and preparation of developer's budget. Investment appraisal techniques. Aims of public developers and the use of cost/benefit analysis for evaluating public projects. Choice and acquisition of sites and their effects on developments. Sources of funds for development, public investment, mortgage financing. Development bonds, loans, grants, subsidy and taxation. Group assignment, using peer support to develop the knowledge and skill for aligning cost plan to preliminary estimate or cost limit.

QTS 413: Construction Project Management (3 Units C: LH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. Develop an understanding and knowledge of basic principles of project management;
2. Develop an awareness and understanding of the multidisciplinary nature of project management;
3. Acquire an understanding of major project management professional bodies and the basics of their book of knowledge;
4. Develop the knowledge and skill of project planning and scheduling and some scheduling software applicable to the construction industry; and
5. Develop the knowledge and skill of managing various aspects of construction projects.

Course Contents

Nature of projects and project environment; introduction to project management; major professional bodies responsible for project management and introduction to their books of knowledge. Managing the construction client; project strategy; managing the construction process: work breakdown structure. Construction programming – types of programmes; programming techniques: the Gantt chart, network analysis among others.

Managing project finance: client cash flow, contractor's cash flow and cash flow forecasting; project control – earned value method; techniques and principles of Total Quality Management (TQM). Lean thinking in construction; project commissioning and testing of installations. Managing project completion; project management software. Introduction to project monitoring and evaluation. Application of project management toolkits to green construction.

QTS 501: Measurement of Mechanical, Electrical and Plumbing Installations (3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify and categorise the works that constitute electrical, mechanical and plumbing services in buildings and other construction works;
2. demonstrate the knowledge and understanding of electrical, mechanical and plumbing services technology applicable to buildings and other construction works; and
3. explain and apply the rules of the Building and Engineering Standard Method of Measurement (BESMM) to quantify electrical, mechanical and plumbing services in construction projects.
4. prepare model electrical and mechanical services bill for a typical building using electronic means such as MS Excel and or any of the standard industry software.

Course Contents

Measurement shall include for electrical, mechanical and plumbing installations. Electrical installations: electrical equipment and control gear, conduits, trunking, cables and conductors. Fittings and accessories shall be grouped according to power distribution, Lighting, ventilating, and security system - CCTV, telephones, signals, fire-alarms, burglar-alarms, earthen conductors and lighting conductors. Mechanical and plumbing installations: measurement of cold and hot water supply. Sanitary installations, Air conditioning and gas installation. Firefighting installation. Refuse disposal installation, special equipment including incinerator, refuse chutes. Installation of air handling, automatic control, kitchen equipment, laundry equipment, mechanical movement including lifts, hoists, escalators, conveyors, and associated builders' works. Production of bill of quantities for the measured works: using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured.

QTS 502: Procurement and Measurement of Industrial Engineering Works (2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain an awareness and understanding of the various types of industrial engineering projects;
2. Gain an understanding of the peculiarity of industrial engineering works;
3. Develop the knowledge and understanding of the procurement methods for securing industrial engineering projects;

4. Acquire the knowledge and understanding of the applicable standard methods for measurement of industrial engineering works;
5. Demonstrate the knowledge and understanding of the technology and construction process involved in Oil and gas; Electrical and Solar Power generation, telecommunication, Mining and Quarrying, among others; and
6. Develop the knowledge and skills for measurement and bill production for different types of industrial engineering works.

Course Contents

Definition and scope of industrial engineering works; procurement methods of industrial engineering contracts: Joint venture/management contracting/ turnkey; PPP/PFI; Contractor-led procurement. Financing of industrial engineering works: Feasibility studies, Letter of credits, technological licensing and patents. Documentation of industrial engineering contracts. Introduction to Standard Methods of Measurement for Industrial Engineering Construction (SMMIEC). Introduction to international construction measurement standards; Introduction to the relevant sections of BESMM4R. Measurement and description of industrial engineering works in the following areas:

Oil and gas: extraction/production, flow stations and oil pipelines, refinery, distribution (equipment, piping and storage).

Power and Telecommunication: power generation – hydro, gas, wind, thermal; power transmission. Power distribution, Sustainable energy - biomass, solar, inverter), telecommunication, landline - analogue and digital modes, mobile telecommunication - control systems, cabling, mast and the likes.

Mining and Quarrying: mining (iron ore), steel rolling mill, open cast mining, production - iron furnace, cast iron, alloy, wrought iron, mining (bauxite), aluminium smelting and production plant, mining (limestone), cement production, packaging and distribution associated piping and accessories, quarrying.

Agro-allied Factories: canning and bottling plant. Paper and pulp manufacturing plant. Ginnery and textile plant, sugar and salt refineries, fertilizers and processing, food and beverages processing plant. Associated piping and accessories.

Pharmaceutical and chemical production factories: chemical and paint manufacturing, pharmaceutical plant, Petrochemical plant. Associated piping and accessories,

Electronic and Computer production factories: production plant, Hardware, piping and accessories.

Water and Waste Water treatment plant: water treatment plant, and waste water treatment plant, piping and accessories.

Production of bill of quantities for the measured works using manual method, the use of MS Excel and dedicated computer software. Site visits, use of construction pictures and video diaries to aid students' understanding of the sequence of construction works being measured.

QTS 503: Advanced Construction Economics

(2Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to: (Use measurable outcomes. All the points below need to be revised. Presently, they are not tenable)

1. Gain an awareness and understanding of the latest RIBA plan of work and the RICS New Rules of Measurement 2 (NMR2) as applicable to preparing preliminary cost estimates or budgetary estimates for construction projects;
2. Understand theory and principles of cost control, total cost appraisal, Life Cycle Costing (LCC) and whole life costing (WLC);
3. Develop the knowledge and skill for preparing preliminary estimate, cost plan and cost control;
4. Develop the knowledge and skill for identifying, costing and managing risk in construction; and
5. Develop the knowledge and skill required for practical value management and value engineering.

Course Contents

Preliminary estimate, using the RICS new rules of measurement 2 (NMR2); cost planning during feasibility, outline proposals and scheme design stages. Importance of control over expenditure: Cost control during inception, feasibility and outline proposal stages. Cost control during scheme design and detail design stages. Real life project exercises on cost planning and control, leading to contract sum prediction. The concept of cost in use/ whole life costing: present and future payments, time value of money; maintenance and running cost; Life of building and components including effects of errors in prediction. Application of operational research to building procurement.

Post contract cost control: project baseline cash flow forecast, post contract cost control using earned value analysis. Risk management in construction: risk identification methods, risk analysis methods (quantitative and qualitative), risk response strategies. Value management & value engineering in construction: definitions and distinction between value management and value engineering; distinction between cost cutting and value management; value management methodology. Value engineering job plan; value management methods: the 40-hr workshop, the charette. Value management techniques: Functional Analysis System Technique (FAST), SMART (Simple Multi-attribute Rating Technique (SMART), brainstorming, value matrices; project intervention and value management opportunity points; critical success factors in value management. Seminar presentation on new trends in construction economics. Introduction to design thinking as problem solving approach that impacts on economy of construction

QTS 504: Public Project Procurement Management

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Understand the principles of procurement and the types that are available in the construction industry;
2. Acquire the awareness and understanding of PPP, EPC;
3. Acquire the awareness and understanding of collaborative procurement forms: partnering, alliances and joint ventures;
4. Demonstrate a detailed knowledge and understanding of the latest public Procurement Act;

5. Acquire the knowledge and skills for interpreting and applying the Procurement Act to different project situations in the Nigerian context; and
6. Develop the knowledge and skill for guiding public institutions in successful tendering and contractor selection.

Course Contents

Public projects: definitions, policies and practices of public procurement. Needs and objectives of public procurement. Public procurement Act (2007) of Nigeria. Institution, procurement committee and their functions. Organisation, planning and implementation of procurement processes. The consultant procurement reporting. Bureau of public procurement; national council of public procurement, bureau of public procurement, ministerial parastatals tenders board, ministry or parastatals procurement planning committee (NPPC/PPPC). Tender action; prequalification, verification and analysis, invitation for bids, bid opening, evaluation, reports.

QTS 505: Construction Contract and Administration I

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop an awareness and understanding of the basic principles of dispute resolution, dispute resolution institutions and their operations;
2. Demonstrate the knowledge and understanding of the process of arbitration, statutory backing, award system and challenges facing arbitration practices in Nigeria;
3. Gain an awareness and understanding of the clauses in the various standard forms of construction contracts; and
4. Gain the knowledge and skill in interpreting the financial and contractual implications of some selected clauses that are commonplace in the Nigerian construction industry.

Course Contents

Standard forms of construction contract. Analyses, interpretation and application of condition of contract clauses. Definition of works; meaning of completion, sectional completion, time for completion. Extension of time, instructions, defect liability and maintenance clauses; insurance and payment. Liability of contractor, subcontractor and suppliers. Bankruptcy and insolvency. Preparation of financial statements and final account; determination and preparation of termination accounts; position of parties in absence of express provision, regulatory clauses and statutory conditions. Liability of professional advisers. Scenario-based exercises to help the students to develop requisite skills in contract administration.

Dispute resolution mechanisms, trends in commercial dispute resolutions. Alternative dispute resolutions. Emphasis on arbitration, introduction to the latest arbitration and conciliation Acts in Nigeria and other international documents. Institutions promoting alternative dispute resolutions locally and internationally. Cases in alternative dispute resolution in the Nigerian construction industry making use of adjudication, arbitration mediation, conciliation among others. Multi- door Court systems at State and Federal levels.

QTS 506: Construction Contract and Administration II

(3 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop an awareness and understanding of the common types of standard forms of contract in use in the construction industry;

2. Demonstrate the knowledge and understanding of the principles behind the development of each of the common types and their merits and demerits;
3. Gain an awareness and understanding of the claims in construction and how to handle them; and
4. Gain the knowledge and skill in preparing claims when they occur.

Course Contents

Analyses, interpretation and application of condition of contract clauses. Introduction to common standard forms of contract in use in the construction industry. The following are to be examined: Latest or current versions of JCT variants, FIDIC, NEC and the Nigerian standard form in use by the Bureau of Public procurement.

Construction contracts record management.

Claim and administration of claim in construction contract. Types of claims. Claims initiation, preparation, presentation and negotiation. Types of claims, quantification of claims, restitution claims – claim for a “reasonable sum”. Claims avoidance and prevention. Delay analysis and extension of time, acceleration claims.

QTS 507: Professional Practice and Procedure II

(3 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Gain an awareness and understanding of the need for documentation of site information;
2. Develop the knowledge and understanding of the procedure for site meetings;
3. Develop the knowledge and understanding of Quantity Surveying professional ethics and professional misconduct;
4. Develop the knowledge and skill for calculating and negotiating professional fees; and
5. Gain the knowledge and understanding of the roles of the Quantity Surveying professional bodies

Course Contents

Documentation of site information: site diaries, report of site tests, site visit books; site meeting procedures; professional ethics, rules of conduct and professionalism; professional misconduct, importance of client care, communication and negotiation; professional indemnity insurance; consultancy agreement; consultancy fee administration: consultancy fee calculations and claims, fee competition and negotiation techniques. Client care, joint consultative council for professionals in the construction industry. The role of the Nigerian Institute of Quantity Surveyors (NIQS) and the Quantity Surveyors Registration Board of Nigeria (QSRBN).

QTS 508: Nigerian Public Procurement System

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Demonstrate a detailed knowledge and understanding of the latest public Procurement Act;
2. Acquire the knowledge and skills for interpreting and applying the Procurement Act to different project situations in the Nigerian context; and
3. Develop the knowledge and skill for guiding public institutions in successful tendering and contractor selection.

Course Contents

Meaning and definition of public procurement. The importance of public procurement. Historical brief of developments of procurement law in Nigeria. Detailed treatment of latest public procurement Act to bring out the following: procurement policy and institutional topics; institutions, procurement committees and their functions; organisation of the procurement function; procurement implementation. Examination of procurement laws of some states in Nigeria. Implementation challenges of procurement laws in Nigeria.

The Tendering process and contractor selection using Public Procurement Act (PPA).

Exercises on public procurement tender analysis and evaluation, leading to contractor selection.

The Adjudication Committee. The Tender committee.

Ethics and conflicts in the tendering process. Performance management in procurement

QTS 509: Marketing for Quantity Surveyors

(2 Units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop an awareness and understanding of the basic principles of professional services with reference to quantity surveying;
2. Demonstrate the knowledge and understanding of the process of consulting and client management; and
3. Gain an awareness and understanding of the regulations guiding the marketing of quantity surveying consulting services.

Course Contents

Course synopsis. Nature of quantity surveying services. Range and scope of QS services (traditional and emerging). Consulting process. Marketing of quantity surveying services. Professional regulations guiding marketing of quantity surveying services. Client/customer relationship management. Business and enterprise management. Forms of business organisation. Merger, acquisition, joint venture. Service quality management. International quality certifications.

QTS 510: Integrated Quantity Surveying Studio I

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

Develop the knowledge and skill in producing the following standard documents relating to the work of a client quantity surveyor

1. budget for a given project;
2. cost and plan for a given project;
3. draw up a bill of quantities (with contract conditions, preambles) for a given project; and
4. submit a written tender's reports.

Course Contents

This course integrates the various aspects of quantity surveying courses needed to function as a client. It simulates practice experience by giving students practical projects to work on in groups. Students will have a choice of project simulating the work of a client quantity surveyor. Work relating to developing skill as client quantity surveyor will typically consist of preliminary cost advice on a given project, cost planning, bill of quantities preparation, specifications, articles of agreement and production of tender documents.

QTS 511: Integrated Quantity Surveying Studio II (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

Develop the knowledge and skill in producing the following standard documents relating to the work of a contractor's quantity surveyor.

1. submit a written pretender advert;
2. draw up a priced bill of quantities for a given project;
3. present a written pretender report or document;
4. explain a programme of works undertaken during SIWES;
5. write a detailed statement for a given project; and
6. prepare resource schedules for a given project.

Course Contents

This course integrates the various aspects of quantity surveying courses needed to contractor's quantity surveyor. It simulates practice experience by giving students practical projects to work on in groups. Students will have a choice of project simulating the work of a contractor's quantity surveyor. Work relating to developing skill as a contractor's quantity surveyor will typically consist of responding to tender adverts, pricing of bills of quantities, preparation of tender programme, contractor's cash flow forecasting and analysis, preparation of contract master programme.

QTS 512: Project Dissertation

(6 Units C:PH 270)

Learning Outcomes

At the end of this course, students should be able to:

1. Develop the knowledge and understanding of how to independently develop research questions and generate researchable topics;
2. Carry out literature review relevant to their self-selected topic and properly reference them using approved referencing style relevant to construction industry research;
3. Develop the knowledge and understanding of appropriate research methods for the chosen subject of investigation;
4. Develop statistical skills for analysing research data and for drawing sound inferences and conclusions from results; and
5. Develop the knowledge and skill of scientific writing and presentation.

Course Contents

This course involves an investigation of a topical issue relating to the theory and practice of quantity surveying. Each student is expected to work on an independent topic. The objective of the dissertation is to develop the capacity of the student to carry out an in-depth investigation of a self-selected research topic. The student must understand and define the topic, carry out a detailed review of literature on previous work on the topic, carry out meaningful analysis and present findings in a precise and coherent manner using acceptable tools of investigation and report writing. The work should be well written in scientific language and format. It should be presented before a panel of examiners and graded.

Minimum Academic Standards

Equipment

In order to achieve the standard benchmark requirements for this programme, there should be provision of at least one (1) equipment for every three (3) students for a particular type of equipment. That is, the ratio of equipment to students should be 1:3. Examples are: one desk top computer installed with relevant quantity surveying software for every three students. Therefore, the following minimum amount of equipment with appropriate accessories are recommended:

General office equipment

Item Number	Description of Items
1	Photocopying Machine
2	Plan Copier Machine
3	Guillotine
4	Scanner jet machine
5	Projector Stand
6	Transparency marker
7	Projector and Screen
8	Drafting tables
9	Spiral binder

Block laying and concreting/carpentry services workshop

Item No.	Description of Items
1.	Digger
2.	Wheelbarrow
3.	Block moulding machine (Standing)
4.	Block moulding machine (Hand)
5.	Bucket
6.	Head pan
7.	Slump test apparatus
8.	Cube mould 150mm/100mm
9.	Pallet
10.	Tamping rod
11.	Reinforcement cutter
12.	Plum level (600mm)
13.	Plum level (1200mm)
14.	Boat level
15.	Fancy blocks/ Clay products
16.	Spade
17.	Crack Detention Microscope
18.	Concrete Rebound Hammer

19.	Electric Concrete Mixer A
20.	Electric Concrete Mixer B
21.	Digital compression machine
22.	Hand pump
23.	Digital Weighing Scale (150kg)
24.	Concrete Rebound Hammer (Manual)
25.	Concrete Rebound Hammer (Digital)
26.	Hand trowel
27.	Spray Pump
28.	4 X 4 Ladder
29.	Analogue Weighing Scale (50kg)
30.	Metal Builders Square
31.	2HP Mechanical Poker machine with nozzle
32.	Flat Bed Mechanical Compactor
33.	Set of Reinforcement sample
34.	Cylindrical Cube Mould(150mm)
35.	Set Concrete Sampling Apparatus
36.	Manual Tiles Cutter(Small Size)

Carpentry section workshop

Item No.	Description of items
1	Claw Hammer
2	Warrington Hammer
3	Set of compass saw blades
4	F-Cramp
5	G-Cramp
6	Try/Iron square
7	Firmer chisel
8	Socket chisel
9	Pincers
10	Rip saw
11	Panel saw
12	Hand saw
13	Sash cramp
14	Bow Hack saw
15	Ear muffler
16	Multiple Wood working machine
17	Standing Band saw
18	Table band saw
19	Standing Spindle moulder
20	Table Spindle moulder
21	Pillar Drilling machine
22	8" Bench Grinder
23	Hercules table saw

24	RYOBI Standing saw
25	200AMPS Dubia Welding Machine
26	Router machine
27	Medium Size Silver Tool Box
28	Plate cutter
29	Tape (30m)
30	Cold chisel
31	Riveting machine
32	Tape rule
33	Slide rule
34	Iron square
35	Steel rule
36	Bar
37	Scraper
38	Jack plane
39	Spray gun with hose
40	Work bench
41	Mitre Saw
42	Rechargeable circular saw
43	Power Drilling Machine
44	Set of School Driver
45	Power jig saw
46	Impact Drilling Machine
47	Multi sander
48	Power circular saw
49	Orbital sander
50	Diamond compass saw
51	Table Circular saw
52	Spray machine
53	Power Planer
54	Power Grinding Machine
55	Spoke shave
56	Hand engraver
47	Rechargeable power drill
48	Smooth plane
49	First Aid Box
50	Compound Mitre Saw
51	Power Router
52	Drilling Machine
53	4 X 4 Ladder
54	Generator (8.5 KV) Fireman
55	SET of carbide saw blade (6"-12") set
56	Power reciprocating saw
57	Power Nail Gun
58	Angle Grinder
59	Sanding Machine

Building services workshop

Item No.	Description of items
1	Paint brush
2	Roller brush
3	Block brush
4	Wire/cable sample board
5	Tool box
6	Aluminum colour chart
7	Sliding window sample
8	Projected window sample
9	Hack saw
10	PVC pipe bender
11	Vernier caliper
12	Micrometer screw gauge
13	Fire extinguishers
14	Portable dicing machine
15	Electrical fishing wire
16	Cooker unit
17	Light dimmer
18	Door bell
19	Splitter switch
20	Nose Guard
21	Had-Hat
22	Hand Gloves
23	Power and lighting outlets
24	Conduit pipe and accessories
25	Plumbing pipe and accessories
26	Floor and wall tile samples
27	Cutlass
28	PPR pipes and accessories
29	PVC pipes and fittings
30	G.I. pipes and accessories
31	Shower cubicle
32	Fish Bath-2000 Its
33	Surface Pump 1HP
34	Submersible Pump 1HP
35	TMT Extractor Fan
36	Fish Bath-1000 Its
37	Fish Bath-2000 Its
38	Complete Set of bathroom Mirror and accessories
39	Urinal Bowl
40	Bidet
41	Kitchen Sink complete set
42	15litre Water Heater
43	30litre Water Heater

44	Hand Dryer
46	PPR Machine
47	3 step adjustable ladder
48	Laser Measuring Tape with stand
49	Digital veneer caliper
50	Digital Micrometer screw gauge
51	Digital Wheel Meter
52	Hydrometer

Multimedia equipment

Item No.	Description of items
1	971 x 575 x 58.7mm LG LED screen.
2	Multimedia Projector
3	Projector Screen
4	Laser Pointer
5	Digital camera (Nikon D5200)
6	Photocopy Machine (Sharp M256)

Wood science workshop

Item No.	Description of Items
1.	Circular sawing Machine
2.	Narrow band saw
3.	Surface planer
4.	Combined planer
5.	Lathe Machine
6.	Compressor
7.	Spindle moulding machine
8.	Pillar drilling machine
9.	Power Chain Saw

Computer laboratory

Item No.	Description of Items
1.	Digital Camcorder + Bag
2.	Overhead Projector
3.	Multimedia Projector & Screen
4.	Projector Screen
5.	Medium size Fridge
6.	Bed Side Fridge
7.	Photocopy Machine
8.	Generator (2.5 kvA)
9.	Printer (Laser) Hp 1100
10.	Printer (Laser) Hp 2015
11.	Printer (Laser) Hp 1018
12.	Printers (Laser) Hp 2055

13.	Printers (Desk Jet) Hp 2600
14.	Printers (Desk Jet) Hp 5610
15.	Table Fan
16.	Standing Fan
17.	Spiral Binding Machine
18.	A/C(window unit 1.5hp)
19.	A/C(window unit 1.5hp)
20.	A/C(Split Unit 1hp)
21.	Computer (Desktop)
22.	Computer (Desktop)+Master bill, QS CAD Package and other QS software. BIM compliant software (NAVIS Works)
23.	Computer (Desktop) at the HOD Office
24.	Computer (Laptop)
25.	Computer (Laptop)
26.	Computer (Desktop)
27.	Public Address System

Surveying instruments

Item No.	Description of Items
1.	Ranging poles
2.	Gunter's chain
3.	100m steel measuring tape
4.	50m steel measuring tape
5.	Measuring wheel
6.	Compass
7.	Automatic levelling instrument
8.	Digital levelling instruments
9.	Head pan
10.	Spade
11.	Wheelbarrow
12.	Walkie talkie
13.	Total station

Standard for Staffing

The required minimum number of academic staff (Lecturers) should be 10. That is, 2 Professors/Associate Professor, 2 Senior Lecturers and 6 other categories of lecturers such as Lecturer I, Lecturer II and Assistant Lecturers. In addition, 2 Graduate Assistants/Teaching Assistants/Demonstrators should be included to help the lecturers in conducting tutorials.

Administrative Staff

The required minimum number of administrative staff members include: 1 Confidential Secretary, 1 Clerical officer, 1 Typist, 1 Messenger and 1 Cleaner.

Technical Staff

The required number of Technical Staff shall consist: 3 Technologists (HND Holders) and 1 Draughtsman (OND Holder) in Architecture.

Library and Information Resources

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories Clinics Workshops and Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

B.SC./B. Tech Surveying and Geoinformatics

Overview

Surveying is the science that provides the spatial location of the earth's features and other environmental information necessary for map production, designing engineering works, planning, location and exploitation of natural resources as well as land administration. It is a multi-disciplinary subject which serves as foundation discipline in engineering, environmental studies, analysis and planning. Geoinformatics is an integrated process for mapping and geoinformation production through the supporting technologies of geodesy, photogrammetry, remote sensing, cartography, computer science and land administration. Recent advances in computer, space technologies and information science infrastructure have revolutionized the methods of collection and dissemination of geodata and geoinformation products. As a result, the classical analogue methods have given way to the more modern digital methods in both data acquisition, processing and presentation. These changes have propelled surveyors to change their way of doing things and to expand their scope of activities. Consequently, the term "Surveying" cannot adequately describe geodata activities and products. The nomenclatures universally adopted now by Surveying Departments and organizations are Geoinformatics, Geomatics and/or Geomatic Engineering. As a result of this and based on Nigerian laws that set up the professional body, Surveyors Council of Nigeria (SURCON), which recognizes only the practice of surveying, the tertiary institutions offering "Surveying" in Nigeria have decided to adopt a new nomenclature called Surveying and Geoinformatics which is described as an applied science which gives comprehensive training in a programme that deals with acquisition, analysis, storage, distribution, management and application of spatially referenced data using information science infrastructure.

Philosophy

The philosophy of the programme is to expose students to the essential theoretical and practical training needed to make them grow into full and well-qualified professional who is abreast with technological advancements in the field of Surveying and Geoinformatics and to inculcate in the students, entrepreneurial and managerial skills geared towards self-employment.

Objectives

The objectives are to:

1. ensure adequate knowledge of mathematics, physics, computer science, environmental management and protection, law, finance and management studies needed by surveying and geoinformatics experts;
2. provide students with a broad and balanced foundation in theoretical and practical skills in surveying and geoinformatics;
3. develop in students, the ability to apply theoretical and practical knowledge of surveying and geo informatics in solving environmental problems;
4. provide students with knowledge and skills from which they can proceed to further studies in the specialized areas of surveying and geoinformatics; and
5. Develop in students, the ability to apply Surveying and geoinformatics for planning and management across various field and in particular, decision making.

Employability Skills

A graduate of Surveying and Geoinformatics, to be employable, should have the ability to:

1. carry out relevant measurements and conduct field procedures to such a standard that will qualify him/her to practice the profession in key areas of the programme;
2. monitor observations and changes in the systematic and reliable recording of documentations thereof;
3. plan, design and execute Surveying and Geoinformatics projects satisfactorily from the beginning to the end;
4. process, analyse, integrate and transform data obtained from different data acquisition systems;
5. understand and implement geospatial policies at local, national and international levels;
6. articulate the roles of geospatial data products and services in relation to social and economic developments of nations;
7. communicate effectively with stake holders using at least two international languages in addition to local language(s);
8. initiate, organise and assume risk for Surveying and Geoinformatics business ventures such as training programmes for the use of instruments, acquisition and processing of data, techniques for technical writing and presentation of reports as well as winning Surveying and Geoinformatics contracts;
9. Ability to create, populate and maintain spatial and attribute databases for all sectors of the economy;
10. Integrate different methods of surveying to execute a given project to generate a formidable data product; and
11. Versatile in different format of visualization and presentation of various map data.

21st century skills

A graduate of Surveying and Geoinformatics of the 21st Century should possess the following skills:

1. Competence in the use modern hard and software needed for Surveying and Geoinformatics projects.
2. Competence in designing and using computational tools, using computers, for processing acquired geospatial data.
3. Qualitative and quantitative analysis of results skills to determine reliability of Surveying and Geoinformatics products.
4. Ability to articulate the roles and importance of geospatial data products and services for the social and economic development of nations.
5. Communication skills to effectively present geospatial research reports, both orally and in writing to a wide range of audience.
6. Ability to initiate and organise entrepreneurial ventures.
7. Competence in internet facilities for acquiring, processing and disseminating geospatial data.

Unique features

The unique features of Surveying and Geoinformatics programme compared with similar programme in top Universities of the World are:

1. the programme is environmental science based unlike other Universities' programmes which are only engineering based;
2. both theory and practical of each course are to be taken simultaneously;
3. introduction of camping exercise outside the campus of University for real life Surveying and Geoinformatics project execution experience;

4. introduction of, at least one additional, foreign language to improve communication skills for favourable competition for Surveying and Geoinformatics related jobs outside Nigeria; and
5. introduction of Surveying and Geoinformatics entrepreneurial activities.

Admission and Graduation requirements

Admission Requirements

Five (5) year Programme admission: In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include Mathematics, Physics, English Language and any two of the following subjects: Geography; Technical drawing; Fine Arts; Chemistry; Biology; Economics; Agricultural Science , Data Processing and Elementary Surveying may be admitted into the programme.

Direct Entry Admission:

Candidates who satisfy the UTME requirements and have G.C.E. (A/Level) passes in Mathematics, Physics and any one of the following subjects: Geography, Technical drawing, Fine Arts, Chemistry, Biology, Economics, Agricultural Science **OR** hold a National Diploma in Surveying and Geoinformatics or other related discipline with a minimum of upper credit from the recognised programme may be admitted into 200 level.

Candidates who satisfy the ND requirements and in addition hold Higher National Diploma in Surveying Geoinformatics with a minimum of Upper credit from the recognised accredited programme and have successfully completed mandatory National Youth Corps Service (NYSC) scheme may be admitted into 300 level of the programme.

Graduation Requirements

To qualify for graduation, such students should have passed a minimum of 150, 120 and 90 credit units, for UTME, ND/GCE (A level) and HND direct entry respectively, including all compulsory courses. The duration of surveying and geoinformatics programme is minimum of ten (10), eight (8) and six (6) academic semesters for UTME, ND and HND direct entry respectively and the maximum of fifteen (15), twelve (12), and nine (9) academic semesters for UTME, ND and HND direct entry respectively.

Global Course structure

100 level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples and Culture	2	C	30	-
PHY 101	General Physics I	2	C	30	-
PHY 102	General Physics II	2	C	30	-
PHY 107	General Physics Practical I	1	C	-	45
MTH 101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary Mathematics II	3	C	45	-
SVG 101	Introduction to Surveying and Geoinformatics	1	C	15	-
	TOTAL	16			

200 level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45
SVG 201	Basic Surveying I	2	C	15	45
SVG 202	Cadastral Surveying I	2	C	15	45
SVG 203	Field Astronomy	2	C	15	45
SVG 204	Photogrammetry I	2	C	15	45
SVG 205	Cadastral Surveying II	2	C	15	45
SVG 206	Computer Applications in Surveying	2	C	15	45
SVG 207	Surveying Computations	2	C	30	-
SVG 208	Basic Surveying II	2	C	15	45
SVG 209	Surveying Instrumentation	2	C	15	45
SVG 210	Geodetic Astronomy	2	C	15	45
	TOTAL	24			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	45
SVG 301	Photogrammetry II	2	C	15	45
SVG 302	Remote Sensing I	2	C	15	45
SVG 303	Mining and Special Survey	2	C	15	45
SVG 304	Topographic Surveying	2	C	15	45
SVG 305	Cadastral Surveying III	2	C	15	45
SVG 306	Geodetic Surveying	2	C	15	45
SVG 307	Adjustment Computation I	2	C	30	-
SVG 308	Engineering Surveying	2	C	15	45
SVG 309	Geographic Information System	2	C	15	45
	TOTAL	22			

400 level

Course Code	Course Title	Units	Status	LH	PH
SVG 401	Hydro-graphic Surveying I	2	C	15	45
SVG 402	SIWES	15	C	-	675
SVG 403	Map Projection	2	C	30	-
SVG 404	Adjustment computation II	2	C	30	-
SVG 405	Photogrammetry III	2	C	15	45
SVG 406	Remote Sensing II	2	C	15	45
	TOTAL	25			

500 level

Course Code	Course Title	Units	Status	LH	PH
SVG 501	Aerial Triangulation	2	C	15	45
SVG 502	Geometric Geodesy	2	C	30	-
SVG 503	Hydro-graphic Surveying II	2	C	15	45
SVG 504	Satellite Geodesy	2	C	15	45
SVG 505	Photogrammetry IV	2	C	15	45
SVG 506	Research Method	2	C	30	-
SVG 507	Physical Geodesy	2	C	30	-
SVG 508	Project Dissertation	4	C	-	180
	TOTAL	18			

Course Contents with Learning Outcomes

GST 111: Communication in English (2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing, Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and Mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyze the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building
6. analyse the role of the Judiciary in upholding people's fundamental rights
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

PHY 101: General Physics I

(2 Units C: LH 30)

Learning Outcomes:

On completion of this course, students should be able to:

1. identify and deduce the physical quantities and their units;
2. differentiate between vectors and scalars;
3. describe and evaluate motion of systems on the basis of the fundamental laws of mechanics;
4. apply Newton's laws to describe and solve simple problems of motion;
5. evaluate work, energy, velocity, momentum, acceleration, and torque of moving or rotating objects;
6. explain and apply the principles of conservation of energy, linear and angular momentum;
7. describe the laws governing motion under gravity; and
8. explain motion under gravity and quantitatively determine behaviour of objects moving under gravity.

Course Contents

Space and time. Units and dimension. Vectors and scalars. Differentiation of vectors. Displacement, velocity and acceleration. Kinematics, Newton laws of motion (Inertial frames, Impulse, force and action at a distance, momentum conservation). Relative motion. Application of Newtonian mechanics, equations of motion, conservation principles in physics, conservative forces, conservation of linear momentum, kinetic energy and work. Potential energy, system of particles and centre of mass. Rotational motion; Torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates, conservation of angular momentum and circular motion. Moments of inertia, gyroscopes and precession. Gravitation: Newton's law of gravitation, Kepler's Laws of planetary motion, gravitational potential energy, escape velocity, satellites motion and orbits.

PHY 102: General Physics II

(2 Units C: LH 30)

Learning Outcomes:

On completion of this course, students should be able to:

1. explain the concepts of heat and temperature and relate the temperature scales;
2. derive, and apply the fundamental thermodynamic relations to thermal systems;
3. describe and explain the first and second laws of thermodynamics, and the concept of entropy;
4. state the assumptions of the kinetic theory and apply techniques of describing macroscopic behaviour;
5. deduce the formalism of thermodynamics and apply it to simple systems in thermal equilibrium; and
6. describe and determine the effect of forces and deformation of materials and surfaces.

Course Contents

Heat, temperature and temperature scales. Gas laws; general gas equation, thermal conductivity. First Law of thermodynamics, heat, work and internal energy. Reversibility, second law of thermodynamics, heat engines and entropy. Zero's law of thermodynamics, kinetic theory of gases, molecular collisions and mean free path. Elasticity, Hooke's law, Young's, shear and bulk moduli. Hydrostatics, pressure, buoyancy, Archimedes' principles. Bernoulli's equation and incompressible fluid flow. Surface tension, adhesion, cohesion, viscosity, capillarity, drops and bubbles.

PHY 107: General Practical Physics I

(1 Unit C: PH 45)

Learning Outcomes:

At the end of the course, students should be able to:

1. Conduct measurements of some physical quantities;
2. Make observations of events, collect and tabulate data;
3. Identify and evaluate some common experimental errors;
4. Plot and analyse graphs; and
5. Draw conclusions from numerical and graphical analysis of data.

Course Contents

Quantitative measurements. Treatment of measurement, errors and graphical analysis. Experimental techniques for studies of meters, oscilloscope, mechanical systems, electrical and

mechanical resonant systems, light, heat, viscosity and others covered in PHY 101. Emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis and deduction.

MTH 101: Elementary Mathematic I

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. explain Set, Subset, Union, Intersection, Complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements and Venn diagrams. Real numbers, integers, rational and irrational numbers. Mathematical induction, real sequences and series. Theory of quadratic equations and binomial theorem. Complex numbers, algebra of complex numbers and the Argand diagram. De-Moivre's theorem and nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course students should be able to:

1. explain the types of rules in differentiation and integration;
2. discuss the meaning of function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching. Integration as an inverse of differentiation. Methods of integration and definite integrals. Application to areas and volumes.

SVG 101: Introduction to Surveying and Geoinformatics (1 Units C: LH 15)

Learning Outcomes:

At the end of this course, students should be able to:

1. enumerate historical development, classes and uses of Surveying and Geoinformatics;
2. highlight the basic principles of Surveying and qualities of Surveyors;
3. justify relationship between Surveying and Geoinformatics and other disciplines; and
4. identify employment opportunities in Surveying and Geoinformatics.

Course Contents

History of Surveying. Definition and procedural categories in Surveying. Principles, Classes and Uses of Surveying. Methods used in Surveying. Fields of study in Surveying. Practice of Surveying and

Qualities of a Surveyor. National and International Surveying Organizations. Concept of Geographic Information System (GIS). Benefits and components of GIS. Definition, classes and units of measurements. Types, treatment of errors, precision and accuracy in Surveying measurements. Employment opportunities in Surveying and Geoinformatics. Basic concept, historical development and applications of Geoinformatics. Relationship among GIS, Geoinformatics and Geo-matics Engineering. Geospatial data sources. Data models, format, quality and providers.

GST 212. Philosophy, Logic and Human Existence (2 Units C: LH 30)

Learning Outcomes:

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character moulding.

ENT 211: Entrepreneurship and Innovation

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking;
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence;
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and rest of the world; and
8. state the basic principles of e-commerce.

Course Contents

Concept of entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

SVG 201: Basic Surveying I

(2 Units C: LH 15; PH 45)

Learning Outcomes:

After the completion of this course, students should be able to:

1. carryout measurements, apply necessary corrections to attain required accuracy;
2. use simple methods of Surveying and Geoinformatics to collect geospatial data; and
3. process acquired data and produce surveying plans at suitable scales.

Course Contents

Basic principles and methods used in ranging, chaining, off-setting, measurement of tie and check lines. Principles and methods used in chain surveying. Carrying out measurements and plotting of chain survey of an area. Sources of errors, corrections and accuracy attainable in chain surveying. Principles and methods used in compass surveys. Collection of field data, processing of data and production of plan at suitable scale in compass surveying. Principles and methods, field observations, computations, sources/correction of errors and production of plans at suitable scale in plane tabling.

SVG 202: Cadastral Surveying I

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain historical development and methods of land acquisition in Nigeria;
2. carry out comparative analysis of regional land administration systems in Nigeria;
3. discuss the provision of laws governing land administration in Nigeria; and
4. identify the limitation of maritime boundaries in Nigeria.

Course Contents

History, principles and methods of dealings in land tenure system in Nigeria. Customary land tenure systems in Nigeria. Right and interests in land and rights to land and natural resources. Deeds and title registration systems. Registrable Instruments and Deed Registry. Defects of deeds registration and title registration. Title registration act, registered land act and land use decree. Comparative

analysis of land administration systems. Environmental coastal zone management. Law of the sea and delimitation of maritime boundaries.

SVG 203: Field Astronomy

(2 Units C: LH 15; PH 45)

Learning Outcomes:

Upon completion of this course, students should be able to:

1. discuss the nature and motion of planets, solar, stellar and satellite systems;
2. use the applications of celestial coordinate system, time system and star almanac; and
3. develop the procedure for the determination of solar and stellar azimuths.

Course Contents

Nature of universe and solar, stellar and satellite systems. The motion of planets, Normal orbit, Kepler's laws and perturbed orbit of satellite. The motion and the relationship of the earth and the sun/star. Stars constellations, magnitude and distance of sun/star from the earth. Solution of astronomical triangle. Celestial coordinate system. Time system, Star catalogues and charts. Uses of stars almanac. Solar and stellar observations. Processing of observations for the determination of azimuth.

SVG 204: Photogrammetry I

(2 Units C: LH 15; PH 45)

Learning Outcomes:

After the completion of this course, students should have the ability to:

1. identify types of photogrammetry and relationship between photogrammetry and land surveying;
2. explain working principles, uses and properties of photogrammetry instruments;
3. use photogrammetry camera and process data collected therefrom; and
4. interpret photogrammetry products.

Course Contents

General introduction to photogrammetry. Relationship of photogrammetry to land surveying, Remote sensing and GIS. Aerial and terrestrial photogrammetry. Classical and digital photogrammetry. Application areas of photogrammetry. Components of photogrammetric camera, photographic processes, distortions and resolution of film-based camera. Working principles and properties of digital cameras. Aerial Photography: classification according to camera axis inclination, angular coverage and photographic materials. Geometry of photographs. Image and object space and coordinate systems, photo scale, tilt, relief displacement and ground coverage. Photographs as perspective projections and difference from maps. Uses of stereoscopes, stereo-plotters (analogue, analytical and digital), comparators and ortho-projectors. Introduction to Photo Interpretation.

SVG 205: Cadastral Surveying II

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the completion of this course, students should be able to:

1. identify general rules, regulations and specifications governing cadastral Surveying;
2. carry out cadastral Surveying and proper keeping of cadastral records; and

3. determine appropriate compensations, claims and proper handling of survey in dispute.

Course Contents

Principles and scope of cadastral surveying. Rules and regulations governing demarcation, organization and procedure for cadastral surveying. Field methods and office preparations for property surveys. Specifications for large scale cadastral surveying. Principles of sub-division of properties and layout design for surveying. Origins, establishment and re-establishment of beacons. Cadastral survey records. Intra/interstate, national and international boundaries. Control surveys. Location of sequence conveyance and reversion of right. Compensation and claim surveys. Procedures for land in dispute surveys. Process of land registration and professional conduct of surveyors.

SVG 206: Computer Applications to Surveying (2 Units C: LH 15; PH 45)

Learning Outcomes:

Upon the completion of this course, students should have ability to:

1. demonstrate understanding of computer hardware, software systems and maintenance;
2. develop and apply simple programs for surveying computations; and
3. use already developed computer packages to process geospatial data.

Course Contents

Introduction to basic computing, hardware and software systems. Basic computer maintenance. Flowchart, Algorithm and steps for program development in VISUAL BASIC, MATLAB and Python environments. Development and applications of computer routines and sub-routine for basic surveying computations like traversing, levelling, triangulation, areas and volumes of earth works. The use of computer packages for storage, processing, retrieval and analysis of geospatial data.

SVG 207: Surveying Computation (2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain the use of figures and processes involved in surveying computations;
2. select and manipulate formulae for calculations in surveying and geoinformatics; and
3. carry out treatment of misclosures and attainable accuracy in surveying computations.

Course Contents

Basic concept and processes of surveying computations. Field and office computations, decimal and significant figures, accurate and inaccurate figures, rounding off and approximation. Care of computation machines. Methods used in surveying computation. Selection and manipulation of formulae for surveying computations. Computations of distances and angles with their various corrections. Computation of grid, magnetic, whole circle and reduced bearings from true bearing. Computations of rectangular coordinates from one station to the other, Computations of bearing and distances from coordinates of known points. Closing misclosure, treatment of misclosure and attainable accuracy. Area computations of surveying networks, Computation of omitted data in a closed network observation. Computations involved in the booking of field observations.

SVG 208: Basic Surveying II (2 Units C: LH 15; PH 45)

Learning Outcomes:

Upon completion of this course, students should be able to:

1. carryout measurements, apply necessary corrections to attain required accuracy;
2. use more advanced methods of surveying and geoinformatics tools for data acquisition and data processing; and
3. demonstrate understanding of elementary adjustment of survey network and production of plans/maps at suitable scales.

Course Contents

Basic concept and types of traverses. Temporary and permanent adjustment of traverse instruments (Theodolite, EDM, Total Station and GPS). Field observations, Forward, Backward and area computations in traversing. Elementary adjustment of traverse network. Production of traverse plan at a suitable scale. Sources of errors and accuracy attainable in traversing. Basic concept, method and uses of leveling. Leveling with inverted staff, double and reciprocal leveling. leveling data collection, computation and elementary adjustment of level network. Sources of errors, corrections and accuracy attainable in leveling. Principles, special features and uses of tachometry. Field observations, computations and production of plans at suitable scales from tachometry. Substance bar and its uses.

SVG 209: Surveying Instrumentation

(2 Units C: LH 15; PH 45)

Learning Outcomes:

After the completion of this course, students should have the ability to:

1. highlight the design of components, sources of errors and accuracy attainable for all instruments;
2. use and take appropriate care of the instruments; and
3. carry out temporary and permanent adjustment of instruments.

Course Contents

Basic principles, design, construction, sources of errors, accuracy attainable, uses and care of the following surveying equipment: Ranging poles, cross staves, optical square prism. Chains, wires, lines tapes, steel bands, Survey compasses, Tripods. Effect of diurnal variations, magnetic, storms and local attraction on compass. Different types and uses of levels, parts of levels and leveling staves. Sub tense bar, Range finder, Parallax bar, Stereoscope, Plan meter, Pantograph, Coordinatograph, Plane-table and other elementary surveying Instruments. Working principles, construction, classification, calibration, types, uses, care, sources of errors, accuracy attainable, temporary and permanent adjustment of the following surveying instruments: EDMs, Theodolites, Levels, Tachometers, Altimeter, Psychomotor, Gravimeter, Doppler shift frequency, Laser, Global Positioning System (GPS), Total station Instruments targets/reflectors, Digital Plotters and scanners, Comparators and Drone.

SVG 210: Geodetic Astronomy

(3 Units C: LH 30; PH 45)

Learning Outcomes:

At the conclusion of this course, students should be able to:

1. explain the procedure for the determination of stellar azimuth using various Astro methods;
2. carry out independent and simultaneous determination of astronomic positions; and
3. justify the use of astronomic positions and directions.

Course Contents

Variations in celestial coordinate system. Timing with stop watch and chronometer, time conversion and variations. Determination of azimuth by hour angle of E-W stars near Elongation. Determination of hour angle of the sun. Computation by hour-angle methods of the sun and correction to astronomic azimuth. Other methods of determining astronomic azimuth. Determination of latitude by circum-meridian altitudes, programme for circum-meridian observations. Observations and computations for the independent determination of latitude and longitude. Selection of pair E-W stars. Simultaneous determination of latitude and longitude (ASTROFIX). Laplace equation and stations and geodetic uses of astronomic positions.

GST 312 Peace and Conflict Resolution

(2 Units C: LH 30)

Learning Outcomes:

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organizations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; Zango Kartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management --- (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution – Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis.

ENT 312 Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical

location;

3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria. Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research. Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, Small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy among others*. Digital Business and E-Commerce Strategies).

SVG 301: Photogrammetry II

(2 Units C: LH 15; PH 45)

Learning Outcomes:

Upon completion of the course, students should be able to:

1. demonstrate good knowledge of the types and orientation procedure in photogrammetry;
2. explain photogrammetry coordinate systems, measurements and application of corrections to photo images;
3. identify mathematical relationship between image and object spaces; and
4. carryout photogrammetry data processing.

Course Contents

Stereoscopy, parallax and height determination. Procedure for interior, relative and absolute orientations. Strip and block formation, stereo-model error analysis. Aero-triangulation by independent models. Stereoscopic models. Model and photo-coordinate systems, measurement and correction of image coordinates. Mathematical relationships between image and object space. Conformal, affine and projective equations. Rotation, collinearity and coplanarity conditions and equations. Space resection and intersection, analytical relative and absolute orientations. Introduction to analytical plotting. Terrestrial photogrammetry methods and applications. Photogrammetric data processing.

SVG 302: Remote Sensing I**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the end of this course, students should have the ability to:

1. explain electromagnetic energy interaction between atmosphere and earth surface;
2. demonstrate understanding of satellite orbit and its characteristics;
3. carryout aerial survey mission of remote sensing;
4. interpret and classify images used in remote sensing; and
5. process and present remote sensing data and results.

Course Contents

Basic concept of Remote Sensing, Electromagnetic radiation and spectrum. Energy interaction with atmosphere and earth surface. Spectral reflectance curves. Passive and active sensing. Platforms, sensors and resolution. Satellite orbital types and characteristics. Overview of popular active sensors which includes MeteoSat, NOAA, LandSat, SPOT, Ikonos, and Quick Bird. Aerial survey missions such as UAVs. Radiometric, spectral, spatial and temporal resolutions and multispectral imagery. Image analysis, visual interpretation and image classification. Presentation of remote sensing data and results.

SVG 303: Mining and Special Surveys**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the conclusion of this course, students should have the ability to:

1. identify different techniques for mining and underground surveying;
2. develop and design underground survey network; and
3. carryout surveying for subsidence and stability of large structures.

Course Contents

Basic concept of mining and underground surveying techniques. Design of underground survey networks. Mine orientation, mechanical and optical shaft plumbing gyroscopic methods, laser and accuracies obtainable. Operation, sources of errors and accuracy obtainable for gyro-theodolite. Volume determination, erosion problems and crustal movements. Survey for subsidence and stability of large structures.

SVG 304: Topographic Surveying**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the conclusion of this course, students should be able to:

1. demonstrate understanding of the principles and uses of topographic mapping;
2. use different instrumental techniques to carry out topographic surveying; and
3. plot and produce contour and other topographic maps/plans.

Course Contents

Principles and uses of topographic maps/plan. Methods of obtaining field data for topographic surveys such as traversing, leveling, tachometry, triangulation, trilateration, intersection, resection planning, office and field recce, observations, field completion and detail survey, computations and adjustment. Contouring and production of other topographic maps/plans.

SVG 305: Cadastral Surveying III**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. interpret and apply survey laws and regulations;
2. justify land information system and code of ethics of Surveying and Geoinformatics; and
3. carryout appropriate costing of mapping projects.

Course Contents

Property laws and survey regulations. Chapter 194 of the laws of the Federation and other relevant survey legislations, decrees and their amendments. Laws in mining Surveys, Rights of way and town planning laws. Land Use Act and Land Information System. Professional practice and body. Control of the profession and code of ethics. Costing of cadastral, topographical, engineering, hydro graphic surveys and other mapping projects.

SVG 306: Geodetic Surveying**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

Upon conclusion of this course, students should have the ability to:

1. identify the main difference between plane and geodetic surveys;
2. design geodetic surveying project with appropriate specifications and accuracy attainable;
3. demonstrate understanding of the different height systems used in geodetic surveying;
4. explain the use and difference between satellite and Laplace stations; and
5. develop appropriate procedure leading to the production of geodetic report.

Course Contents

Basic concept of geodetic surveying. Design, specifications, observational procedure, accuracy attainable for geodetic surveying. Control surveys using triangulation, trilateration and traversing, geodetic leveling. Determination of normal, dynamic and orthometric heights. Satellite station, Laplace station and equations for the control of geodetic surveys. Sources of errors and application of appropriate corrections. Computations of geodetic coordinates. Adjustment of geodetic survey networks. Production of geodetic reports and plans. Deformation surveys and monitoring of large structure.

SVG 307: Adjustment Computation I**(2 Units C: LH 30)****Learning Outcomes:**

At the end of this course, students should be able to:

1. demonstrate good knowledge of sources, propagation and treatment of errors;
2. carry out survey network adjustment using elementary (i. e. non-least squares) techniques;
3. differentiate between linear and non-linear models and linearization of non-linear model; and
4. apply direct and indirect methods of solving systems of linear equations.

Course Contents

Review of matrix algebra. Theory and propagation of errors. Principles and methods of survey network adjustment. Non-least squares adjustment methods like Bowditch, transit, equal shift and unaltered bearing adjustment methods. Braced quadrilateral and centered polygon adjustment. Linear and nonlinear models, Linearization. Methods of solving systems of linear

equations: Direct (ad joint, crammer, elimination/substitution, bordering, Cholesky) methods and indirect or iterative (Jacobi, Gauss-Siedel, SOR) methods. Introduction to least squares adjustment.

SVG 308: Engineering Surveying

(2 Units C: LH 15; PH 45)

Learning Outcomes:

After the end of this course, students should be able to:

1. explain the concept and importance of engineering surveying in engineering projects;
2. carryout feasibility study and prepare appropriate report in engineering survey project;
3. carryout setting out of curves and other structures using various methods; and
4. compute the areas and volumes of earthworks involved in engineering projects.

Course Contents

Basic concept of Engineering Surveying. Feasibility study in engineering surveying. Primary line and control for mapping an area. Route Surveys. Definition, classification and uses of curves and curves formulae. Methods of setting out simple, compound, reverse, transition and vertical curves. Longitudinal and cross sectioning. Super-elevation. Setting out with theodolites, rectangular grid and polar coordinates. Establishment and construction of benchmarks and industrial setting out. Computation of area and volumes of earthwork using trapezoidal rule, Simpson and prismoidal rules, graphical and give and take methods. Cuttings and embankments, Eccentricity, Pappus theorem and Mass haul diagram.

SVG 309- Geographic Information System

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the conclusion of this course, students should be able to:

1. discuss the basic concept, components and uses of GIS;
2. explain the difference between spatial and non-spatial data as well as data format used in GIS;
3. demonstrate understanding of data analysis toolbox, data query and GIS input and output;
4. carryout web mapping using GIS hardware and software packages;
5. manage and encode data in GIS;
6. create, structure and manage database and metadata in GIS; and
7. apply GIS in engineering, surveying and other environmental activities.

Course Contents

Basic concept and uses of GIS. Components of GIS and its relationship to CAD and BIM. GIS data input, sources and integration. Spatial data models: discrete vs. continuous data, 2D, 2.5D, 3D and 4D data. Vector and raster data types. Non-spatial or attribute data. GIS reference system and geodetic datum. Data formats, standards and providers. Topology and spatial relationship. Data analysis toolbox (Selection, buffer, overlay). Data query, GIS output and visualization. Web mapping and location-based services. Temporal GIS and GIS packages. GIS data management. Data encoding principles and equipment. Raster-to-vector conversion. Editing and error analysis. Data scale and accuracy. Database structures, ordered and indexed lists, hierarchical, network, relational, object-oriented and hybrid structure. Standards and practice, creation, maintenance, distribution of metadata. Control terrain representation and

analysis. Network models and analysis. GIS applications in utility management, environmental monitoring and assessment, land management, engineering.

SVG 401: Hydro graphic Surveying I

(2 Units C: LH 15; PH 45)

Learning Outcomes:

Upon completion of the course, students should be able to:

1. carry out position fixing at sea and on water;
2. determine mean sea level topography of the sea bed; and
3. carry out river survey and measurement of current and discharge.

Course Contents

Basic concept of hydro graphic surveying. Z-dimensional positioning at sea and on water. Depth determination, tides and mean sea level. Sounding methods and position fixing at sea. Three-point problem, Strength of fix, Sextants and station pointer. Positioning accuracies, measuring systems and sources of errors. Navigation and positioning, tides and tidal streams. Chart and sounding datums. Mean sea level determination. Tide gauge and poles. River surveys and measurement of current and discharge.

SVG 402: SIWES

(15 Units; C; PH 675)

Learning Outcomes:

At the end of this exercise, students should be able to:

1. carryout survey techniques learnt in various industries and organizations;
2. justify the use of more survey techniques for carrying out survey projects; and
3. explain how to bid and win survey contract and write various survey technical reports.

Course Contents

Students are attached to relevant industries, firms, research institutes with a view to developing more skills in Surveying and Geoinformatics and related areas. Provision of additional opportunities to learn more on, carry out surveying projects and write technical reports. Students are supervised during the training period and are expected to keep log-books and other records designed for the purpose of monitoring their performances.

SVG 403: Map Projection

(2 Units C: LH 30)

Learning Outcomes:

After the completion of this course, students should be able to:

1. identify physical and mathematical representation of earth's surface;
2. explain the theory, uses of map projection and various map projection systems;
3. discuss the concept and characteristics of NTM and UTM; and
4. transform coordinates from Geographic to NTM, UTM and vice versa.

Course Contents

Basic concept, theory and uses of map projection. Representation of the earth's surface by physical and mathematical figures. Geometry of the ellipse and reference ellipsoids. Coordinate systems (Cartesians, spherical and ellipsoidal), Computations on spherical and ellipsoidal surfaces. Types of geodetic reference systems, computational procedures and coordinate transformation

methods. Projection systems: plane, conic, cylindrical, conformal, equidistance, equivalent, azimuthal projections, convergence, line scale factor, arc-to-chord correction. Concept of conformal projection, Transverse Mercator (TM), Nigeria Transverse Mercator (NTM) and Universal Transverse Mercator (UTM). Transformation of coordinates from geographic to NTM and UTM and vice versa.

SVG 404: Adjustment Computation II

(2 Units C: LH 30)

Learning Outcomes:

At the end of this course, students should have the ability to:

1. carry out survey network adjustment using Least Squares Adjustment (LSA) methods;
2. use different approaches for the treatment of large geodetic networks during adjustment;
3. statistically analyse the results obtained from LSA processes; and
4. apply LSA technique in all areas of specialization of Surveying and Geoinformatics.

Course Contents

Partitioning and diagonalization of matrix. Principles of Least Squares Adjustment (LSA). Condition equations, observation equations, combined (mixed) model equations methods of LSA. Design of weight matrices in LSA. Weight and functional constraints. Treatment of large geodetic networks. Addition and removal of observations and parameters. Statistical analysis, error ellipse and error ellipsoid. Application of LSA in Surveying and Geoinformatics.

SVG 405: Photogrammetry III

(2 Units C: LH 15; PH 45)

Learning Outcomes:

At the end of this course, students should be able to:

1. explain the advantages, disadvantages, characteristics and uses of digital images;
2. acquire and process digital photogrammetry data using appropriate instruments; and
3. demonstrate the understanding of bundle and block adjustments in photogrammetry.

Course Contents

Review of photo-coordinates determination. Collinearity and coplanarity principles, bundle and block adjustments. Processes and tasks involved in digital photogrammetry. Generic digital photogrammetry environment and integration with GIS and CAD systems. Software & hardware requirements for digital photogrammetry and digital photogrammetric work stations. Advantages and characteristics of digital images. Spatial, radiometric and spectral resolutions, geometric accuracy, digitization, sampling, quantization of grey levels and noise. Data acquisition for digital photogrammetry using digital cameras, scanners. Data compression, image processing, image enhancement and restoration techniques and image resampling.

SVG 406: Remote Sensing II

(2 Unit C: LH 15; PH 45)

Learning Outcomes:

After the conclusion of this course, students should be able to:

1. discuss fundamentals of digital image processing;
2. carry out pre and post processing exercises on images;
3. demonstrate the understanding of image analysis and remote sensing applications; and
4. integrate remote sensing and GIS in environmental studies.

Course Contents

Analytic digital image processing system. Computer imaging systems, image representation in colour space. Image sampling quantization, quality measurement, data products, storage and retrieval. Photo systems and dip systems. Pre-processing (Encoding and decoding). Sources of image degradation, atmospheric, radiometric and geometric errors, systematic and non-systematic correction and image geometry operations. Image Enhancement, image characters, histogram, scatter plots, statistics and spatial statistics for processing, image models. Spatial transforms, enhancements, radiometric and geometric operators. Fourier transforms, scale space transforms, image fusion and texture analysis. Image classification, spectral discrimination pattern, matching Baye's theorem- signature and feature extraction and training. Supervised and unsupervised methods, error matrix and accuracy estimates. Image analysis, concept of uncertainty, fuzzy partitioning, neural nets, sub-pixel classification concept, pattern recognition, feature descriptors. Remote sensing applications, Integration of Remote Sensing and GIS.

SVG 501: Aerial Triangulation

(2 Units C: LH 15; PH 45)

Learning Outcomes:

After the end of this course, students should have the ability to:

1. carryout flight planning for aerial triangulation;
2. perform single and multiple photo resection; and
3. carryout aerial triangulation processes leading to production of plan/map.

Course Contents

Basic concept of aerial triangulation. Analogue and digital aerial triangulation. Strip formation, strip and block adjustment. Perspective centre determination. Independent model aerial-triangulations. Multiple photo resection. Bundle adjustment of photographs. Flight Planning and procedure of aerial triangulation leading to production of map/plan.

SVG 502: Geometric Geodesy

(2 Units C: LH 30)

Learning Outcomes:

Upon completion of this course, students should be able to:

1. demonstrate understanding of aims and historical development of geodesy;
2. identify representations of the figure of earth and geodetic coordinate systems;
3. carry out geodetic computations on ellipsoid and spheroid;
4. provide solutions to direct and indirect problems on sphere and ellipsoid; and
5. carry out data transformation from one datum to another.

Course Contents

Basic concept of geodesy. Aims and historical development of geodesy. Methods used in Geodesy and factors used for the classification in Geodesy. Representation of the figure of the earth. Coordinate systems like terrestrial and celestial coordinate systems, satellite coordinate system, inertial coordinates, curvilinear and Cartesian coordinate systems. Three-dimensional geodesy, Relative and absolute geodetic positioning. Geometry of an ellipse. Latitudes. space-rectangular coordinates. Radii of curvature. Lengths and areas on ellipsoid. Curves on the ellipsoid. Normal Sections and Geodesics. Direct and inverse problems on sphere and ellipsoid. Geodetic datum and ellipsoid as reference surface. Data transformation from one datum to another.

SVG 503: Hydro graphic Surveying II**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the end of this course, students should be able to:

1. operate and carry out measurement using Echo Sounder;
2. demonstrate the understanding of the development and management of ports;
3. carry out processes involved in dredging, channelization and sedimentation; and
4. demonstrate the understanding of modern techniques used in hydrography and bathymetry.

Course Contents

Sounding, wave propagation, Mathews chart and vertical beam, Echo Sounder instrumentation, operation and calibration. Acoustic waves. Ports development and management. Sweeping, side looking sonar, multibeam sonar and electronic sweeping. Elements of Oceanography, tides, currents, temperature, salinity, dredging and channelization. Pressure measurement, sedimentation and beach erosion. Modern techniques in hydro graphic, bathymetric survey in reservoirs and sediment monitoring in reservoirs using bathymetric data.

SVG 504: Satellite Geodesy**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

At the conclusion of this course, students should be able to:

1. highlight procedural difference between the concepts of geometric and dynamic satellites;
2. identify and explain the observational techniques in satellite geodesy;
3. use software packages for processing satellite data for geodetic positioning; and
4. apply satellite techniques for determining figure of the earth, gravity field.

Course Contents

Basic concept of satellite geodesy. Geometric and dynamic techniques. Methods of observations. Satellites orbits, normal/perturbed orbits. Mathematical model, error behavior and applications of satellite techniques. Types of satellites. Very Long Baseline Interferometry (VLBI), Satellite laser ranging and satellite altimetry. Anatomy of Global Position System (GPS). Description, observations, mathematics models, error analysis, software structure and data processing in GPS. Classical and modern 3-Dimensional approaches to geodetic networks. Global coordinate system and applications of satellite to positioning and figure of the earth, gravity field determination and geodynamics.

SVG 505: Photogrammetry IV**(2 Units C: LH 15; PH 45)****Learning Outcomes:**

Upon completion of this course, students should be able to:

1. apply least squares adjustment techniques for photogrammetric network;
2. acquire and process data for digital photogrammetry;
3. demonstrate understanding of the use of appropriate software in photogrammetric mapping; and
4. carry out data acquisition and processes involved in photogrammetric mapping using Drone technology.

Course Contents

Review of least squares application in photogrammetry. Collinearity and Coplanarity concepts and least squares methods in relative orientation. Strip, bundle and block adjustments. Systematic effects in photogrammetry. Image matching, DTM generation, digital orthophoto creation. Digital line map production, digital monoplotting. Digital photogrammetry using appropriate software. Principles and methods of photogrammetric mapping using Drone technology. Computer applications in photogrammetric projects.

SVG 506: Research Method**(2 Units C: LH 30)****Learning Outcomes:**

At the conclusion of this course, students should have the ability to:

1. identify and explain research problems;
2. review literature and identify available gaps in the literature in order to justify reasons for carrying out such research;
3. carry out data quality assessment, processing of data, presentation and analysis of results; and
4. demonstrate understanding of technical presentation of research report.

Course Contents

Review of methodologies in Surveying and Geoinformatics. Techniques in research methods. Identification of research problems, review of related literature and justification for the research. Description of data source, acquisition, quality and presentation of data, processing of data. Presentation and analysis of results, research findings, conclusions, recommendations and research contributions to knowledge. References and appendices.

SVG 507: Physical Geodesy**(2 Units C: LH 30)****Learning Outcomes:**

After the end of this course, students should be able to:

1. identify various height systems used in geodesy;
2. carry out gravity measurement, reduction and processing of gravity data;
3. demonstrate understanding of direct and inverse problems in geodesy; and
4. use and explain methods of determining the figure and gravity field of the earth.

Course Contents

The earth and its gravity field. Gravitation, gravity and potential. Geoidal undulation and deflections of the vertical, geo potential numbers, orthometric, dynamic and normal heights. Size and shape of the earth, geoid as figure of the earth and other approximations. Gravity observations, absolute and relative gravity values, gravity reduction and gravity anomalies. Inverse problem in physical geodesy. Gravimetric, astro-geodetic, astro-gravimetric and satellite altimetry methods of determining the figure of the earth.

SVG 508: Project Dissertation**(4 Units C: PH 180)****Learning Outcomes:**

Upon conclusion of this course, students should be able to:

1. design and carry out project in any area of Surveying and Geoinformatics;

2. use appropriate techniques and equipment to acquire and process data; and
3. analyse results obtained and produce standard report of the project.

Course Contents

Identification of all types of projects of interest in Survey and Geoinformatics. Choosing, design and planning of project. Acquisition of data, quality assessment of data, documentation, and processing of data. Analysis of results and plotting of map/plan. Production of technical report on the project.

Minimum Academic Standard

Equipment

To achieve the standard benchmark for this programme, there should be provision of at least one (1) equipment for every five (5) students for a particular type of equipment. That is, the ratio of equipment to students should be 1:5. Examples are: one theodolite for every five students, one computer for every five students, one GPS receiver for every five students and so on. Therefore, the following minimum equipment with appropriate accessories are recommended:

6 theodolites; 6 levels; 6 compasses; 6 Tachymeters; 12 GPS (6 handheld; 3 single and 3 dual frequencies) receivers; 3 smart stations; 3 total stations; 1 gravimeter; 1 hydrographic boat; 30 desktop computers; 1 workstation; 5 laptop computers; 5 survey umbrella; 4 A4 printers; 1 A3 printer; 1 A0 printer; 1 A3 scanner; 1 A0 scanner; 1 digital camera; 1 photocopier; 4 walkie talkies; 5 pocket stereoscopes; 2 stop watches; 5 mirror stereoscopes; 1 stereo-plotter; 1 comparator; 1 drone; 1 echo sounder; 2 tide gauges; 1 digitizing table; 5 light tables; 10 tapes/chains; 20 ranging poles; 2 dark glasses; 2 Rheolof prisms; 3 multimedia projectors; 2 measuring wheels; 1 head Pan; 1 spade; 1 wheel barrow; 1 hand trowel; 1 sledge hammer; 1 electricity generator; 1 public address system; software (ArcGIS; ERDAS; ILWIS; QGIS; AUTOCAD; MATLAB; Gravity processing software; GNSS Solution and Drone software).

Staffing

Academic Staff

The required minimum number of academic staff (Lecturers) should be 10. That is, 2 Professors/Associate Professor, 2 Senior Lecturers and 6 other categories of lecturers such as Lecturer I, Lecturer II and Assistant Lecturers. In addition, 2 Graduate Assistants/Teaching Assistants/Demonstrators should be included to help the lecturers in conducting tutorials.

Administrative Staff

The required minimum number of administrative staff members include: 1 Confidential Secretary, 1 Clerical officer, 1 Typist, 1 Messenger and 1 Cleaner.

Technical Staff

The required number of Technical Staff shall consist: 3 Technologists (HND Holders) and 1 Technician (OND Holder).

Library

In addition to the library resources at the University central library, the programme should be provided with fully equipped library and information technology centre with minimum of 5 computers, Internet connectivity, 5 reference books, 5 periodicals, 5 Journals for each of the areas of specialisation in the programme and audio-visual materials. The computers should be

fully connected to the e-library section of the University central library having e-books and e-journals in all areas of specialisation of the programme.

Classrooms, Laboratories Clinics Workshops and Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

B. Sc./ B. Tech. Urban and Regional Planning

Overview

Urban and Regional Planning is the Art and Science of ordering and managing land uses and environment based on detailed understanding and analysis of societal needs within the socio-economic and environmental management framework. It is concerned with the spatial ordering of land use, both in urban and rural settings for the purpose of creating functionally efficient and aesthetically pleasing physical environment for working, circulation and recreation. Town Planning, on the other hand, is concerned with organisation and management of the physical space; through the formulation of design, implementation and monitoring of land use plans and policies at the local, urban and regional levels and environmental management through information technology and entrepreneurship for effective development. It is a broad-based discipline, requiring a multi-disciplinary approach and knowledge. Therefore, it requires a comprehensive education and training in the planning, design and management of the total environment.

Philosophy

The Philosophy of the programme is to develop graduates with all round knowledge in theory and practice in the arts and science of ordering and managing land uses based on the detailed understanding and analysis of societal needs, goals and objectives. These graduates will be exposed to the rudiments of physical planning, urban management, environmental planning and management, entrepreneurship, ICT skills and good urban governance to meet our societal changing needs.

Objectives

The objectives of the programme are to:

1. produce competent professional Town Planners who will meet the critical manpower needs of the country in the management of both urban and rural space;
2. produce Town Planners with multi-disciplinary skills and competence in both design and in socio-economic analysis through the blend of theory, design skills, analysis and practice. In this regard, professionals in other related fields, for example, Architecture, Building, Law, will contribute in teaching in the programme;
3. produce Town Planners who can operate effectively in the environmental management space using Urban and Regional Planning methods and principles;
4. develop the key concepts and principles of Urban and Regional Planning and teach students basic theories, methods and management of land use activities and the environment;
5. train students to acquire skills in research methods so that they can become capable researchers who can execute problem-solving research, applied or pursue pure academic research;
6. develop in students polycentric and problems solving entrepreneurial skills of value in self-employment; and
7. inculcate in students the use of the information and communication technology super highway for the effective management of the environment, land use among others.

Unique Features

The following are the unique features of the Urban and Regional Planning programme:

1. it will inculcate in graduates' skills in Geographic Information System and Remote Sensing;

2. students will acquire practical skills in the use of simple hand tools in modelling making workshop practice;
3. students will be updated and upgraded on the current trends, information technology and knowledge on Climate Change for effective design and Environmental Management;
4. equipped with technical skills to smoothly transit from Analogue to digital planning with application of global positioning system and AutoCAD map and GIS;
5. they will be equipped with modern Urban Environmental management skills for sustainable development;
6. students design and presentations would demonstrate a mastery of problem-solving entrepreneurial skills;
7. students will illustrate Professional competences that would enable them set up private practices in Urban and Regional planning; and
8. students will acquire skills and competences that will enable them to promote regional integration in the practice of urban and Regional Planning.

Employability Skills

A graduate of Urban and Regional Planning should have the following employability skills:

1. Established Town Planning offices in the Federal, State and Local Governments including specialized Town Planning Boards, Local Planning Authorities and the many departments in the Federal Capital Territory.
2. Carrying out Urban and Regional Planning consultancy services to the Federal, State and Local Governments. Such services are also offered to private sector organisations, Universities and other institutions of higher learning.
3. Graduates are trained to seek and acquire employment in many departments of Government including:
 - The Electric Power Industry
 - The Telecommunications Industry
 - National Primary Health Care Development Agency
 - The Nigerian Ports Authority
 - The Nigerian Railway Corporation
4. There are ample consultancy opportunities in the following areas:
 - The Nigerian Civil Aviation Authority
 - The Nigerian Maritime Administration and Safety Agency
 - The State Water Corporations
5. The graduates are equipped to provide specialized services to the security and safety arms of government, including:
 - The State Security Service
 - The Police Service

- The Nigerian Security and Civil Defence Corps
 - The Public Fire Services
 - The Federal Road Safety Commission
 - The Nigeria Custom Service
 - The Nigeria Immigration Service
 - The Nigeria Correctional Service
6. Graduates are further equipped to work in:
- The Federal and State's Environmental Protection Agencies
 - National and State Emergency Management Agencies
7. Undertake teaching and research in Universities, Polytechnics, Specialized Research Institutions and upcoming private research out-fits.
8. The graduates have job opportunities in National Population Commission & Independent National Electoral Commission.

21st Century Skills

A graduate of Urban and Regional Planning in the 21st Century should be able to possess the following skills:

1. Critical thinking, problem solving, reasoning, analysis, interpretation, synthesizing information.
2. Research skills and practices, interrogative questioning.
3. Creativity, artistry, curiosity, imagination, innovation, personal expression.
4. Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
5. Oral and written communication, public speaking and presenting, listening.
6. Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
7. Information and communication technology (ICT) literacy, media and internet literacy, data interpretation and analysis, computer programming.

Admission and Graduation requirements

Admission Requirements

Five (5)/ Four (4) year Programme admission:

In addition to acceptable scores in UTME, candidates must have obtained five Senior Secondary Certificate (SSC) credit passes which must include English language, Mathematics and Geography and any two from Physics, Chemistry, Economics Technical Drawing, Fine Arts, Agricultural Science, Government and Biology.

Direct Entry Admission

Candidates with the following qualifications may be admitted into 200 level of the programme:

1. Holders of National Diploma (ND) either in Town Planning, Land Surveying, Building, Architecture, Estate Management and Quantity Surveying with an upper credit.
2. Satisfied minimum Ordinary Level subjects as stated above;

3. At least two (2) passes at the WAEC/GCE 'A' level and IJMB with passes in Mathematics, Geography and any one of the following: Economics, Physics, Chemistry, Biology, Technical Drawing and Fine Arts.

Holders of HND with upper credit in Urban and Regional Planning and its equivalent may be admitted into 300 level of the programme provided they satisfy the basic entry requirements.

To qualify for graduation, such students should have passed a minimum of 150, 120 and 90 credit units, for UTME, ND/GCE (A level) and HND direct entry respectively, including all compulsory courses. The duration of Surveying and Geoinformatics programme is minimum of ten (10), eight (8) and six (6) academic semesters for UTME, ND and HND direct entry respectively and the maximum of fifteen (15), twelve (12), and nine (9) academic semesters for UTME, ND and HND direct entry respectively.

Graduation Requirements

To qualify for graduation, such students should have passed a minimum of 150, 120 and 90 credit units, for UTME, ND/GCE (A level) and HND direct entry respectively, including all compulsory courses. The duration of Urban and Regional Planning programme is minimum of ten (10), eight (8) and six (6) academic semesters for UTME, ND and HND direct entry respectively and the maximum of fifteen (15), twelve (12), and nine (9) academic semesters for UTME, ND and HND direct entry respectively.

Global Course Structure

100 level

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
GST 112	Nigerian Peoples Culture	2	C	30	-
MTH 101	Elementary Mathematics I	3	C	45	-
MTH 102	Elementary Mathematics II	3	C	45	-
CMS 101	Introduction to Computer Science	2	C	15	45
ECO 113	Theories and Principles of Economics	2	C	30	-
GEO 102	Introduction to Human Geography	2	C	30	-
SOC 101	Introduction to Sociology	2	C	30	-
URP 101	History of Town Planning	2	C	30	-
	Total	20			

200 level

Course Code	Course Title	Units	Status	LH	PH
GST 212	Philosophy, Logic and Human existence	2	C	30	-
ENT 211	Entrepreneurship and Innovation	2	C	15	45

URP 201	Planning Studio I	2	C	-	90
URP 202	Planning Studio II	2	C	-	90
URP 203	Planning Principle and Practice	2	C	30	
URP 204	Introduction to Land Use Planning	2	C	30	-
URP 205	Introduction to Land Surveying	2	C	15	45
URP 206	Introduction to Remote Sensing	2	C	15	45
URP 208	Site Selection and Planning	2	C	15	45
URP 210	Urbanization and Population studies	2	C	30	-
	Total	23			

300 level

Course Code	Course Title	Units	Status	LH	PH
GST 312	Peace and Conflict Resolution	2	C	30	-
ENT 312	Venture Creation	2	C	15	45
URP 301	Planning Studio III	2	C	-	90
URP 302	Planning Studio IV	2	C	-	90
URP 303	Housing Studies	2	C	30	-
URP 304	Planning Theory	2	C	30	-
URP 305	Regional Planning	2	C	30	-
URP 306	Planning Model making Workshop	2	C	-	90
URP 307	Introduction to Transportation Planning	2	C	15	45
URP 308	Urban Design	2	C	15	45
URP 309	Quantitative Techniques and Methods in Planning	2	C	30	-
URP 314	Principles of Landscape Design	2	C	15	45
URP 316	Principles of Geographic Information System and AutoCAD	2	C	15	45
	Total	26			

400 level

Course Code	Course Title	Units	Status	LH	PH
URP 401	Planning Studio V	2	C	-	90
URP 405	Professional Planning and Practice I	2	C	30	-
URP 406	Planning Law and Administration	3	C	45	-
URP 408	Development Control	2	C	30	
URP 421	SIWES	15	C		675
	Total	24			

500 level

Course Code	Course Title	Units	Status	LH	PH
URP 501	Planning Studio VI	2	C	-	90
URP 502	Planning Studio VII	2	C	-	90
URP 508	Project Planning and Implementation	2	C	30	-
URP 511	Entrepreneurship	2	C	15	45
URP 512	Project/Dissertation	4	C	-	180
	Total	12			

Course Contents and Learning Outcomes

100 Level Urban and Regional Planning

GST 111: Communication in English

(2 Units; C; LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English Language;
2. list notable Language skills;
3. classify word formation processes;
4. construct simple and fairly complex sentences in English;
5. apply logical and critical reasoning skills for meaningful presentations;
6. demonstrate an appreciable level of the art of public speaking and listening; and
7. write simple and technical reports.

Course Contents

Sound patterns in English Language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex). Grammar and Usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and Critical Thinking and Reasoning Methods (Logic and Syllogism, Inductive and Deductive Argument and Reasoning Methods, Analogy, Generalisation and Explanations). Ethical considerations, Copyright Rules and Infringements. Writing Activities: (Pre-writing, Writing, Post writing, Editing and Proofreading; Brainstorming, outlining, Paragraphing, Types of writing, Summary, Essays, Letter, Curriculum Vitae, Report writing, Note making and mechanics of writing). Comprehension Strategies: (Reading and types of Reading, Comprehension Skills, 3RsQ). Information and Communication Technology in modern Language Learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening. Report writing.

GST 112: Nigerian Peoples and Culture**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building;
6. analyse the role of the Judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and culture; peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria; Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and self-reliance). Social justices and national development (law definition and classification. Judiciary and fundamental rights. Individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. Cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – Reconstruction, Rehabilitation and Re-orientation; Re-orientation Strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and Corruption (WAIC), Mass Mobilization for Self-Reliance, Social Justice and Economic Recovery (MAMSER), National Orientation Agency (NOA). Current socio-political and cultural developments in Nigeria.

MTH 101: Elementary Mathematic I**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain Set, Subset, Union, Intersection, Complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements and Venn diagrams. Real numbers, integers, rational and irrational numbers. Mathematical induction, real sequences and series. Theory of quadratic equations and binomial theorem. Complex numbers, algebra of

complex numbers and the Argand diagram. De-Moivre's theorem and nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 102: Elementary Mathematics II

(2 Units C: LH 30)

Learning Outcomes

At the end of the course students should be able to:

1. explain the types of rules in differentiation and integration;
2. discuss the meaning of function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation. Extreme curve sketching. Integration as an inverse of differentiation. Methods of integration and definite integrals. Application to areas and volumes.

COS 101: Introduction to Computing Sciences

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic components of computers and other computing devices;
2. describe the various applications of computers;
3. explain information processing and its roles in the society;
4. describe the Internet, its various applications and its impact;
5. explain the different areas of the computing discipline and its specializations; and
6. demonstrate practical skills on using computers and the internet.

Course Contents

Brief history of computing. Description of the basic components of a computer/computing device. Input/Output devices and peripherals. Hardware, software and human ware. Diverse and growing computer/digital applications. Information processing and its roles in society. The Internet, its applications and its impact on the world today. The different areas/programs of the computing discipline. The job specializations for computing professionals. The future of computing.

Lab Work: Practical demonstration of the basic parts of a computer. Illustration of different operating systems of different computing devices including desktops, laptops, tablets, smart boards and smart phones. Demonstration of commonly used applications such as word processors, spreadsheets, presentation software and graphics. Illustration of input and output devices including printers, scanners, projectors and smartboards. Practical demonstration of the Internet and its various applications. Illustration of browsers and search engines. How to access online resources.

ECO 113: Theories and Principles of Economics (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students shall demonstrate the following competencies:

1. define economics;
2. identify the basic economic principles governing the market economy;
3. state the historical evolution of economic ideas;
4. differentiate between micro and macro economic principles;
5. identify various areas of specialisation in economics;
6. Relevance of economic theory to development.

Course Contents

As introduction to the various issues, the nature of economics science. Its scope and methodology. Major areas of specialization. Historical development of economic ideas. Major findings in the various areas of specialization. Elementary principles of Micro-economic theories. Current issues of interest and probable future development. Concept of Equilibrium and Elasticity. Theory of Consumer Behaviour. Theory of Production and Costs. Market structure. Elementary principles of Micro-economic theories. Introduction to macroeconomics. Current issues of interest and probable future development.

SOC 101: Introduction to Sociology

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students shall demonstrate the following competencies:

1. define sociology and identify its basic concepts in the society;
2. differentiate between social norms and societal behaviour in different societies;
3. identify the different societal problems emanating from urbanisation;
4. describe the various theories of social stratification;
5. state the effect of urbanisation resulting the urban rural dichotomy on both rural and urban areas.

Course Contents

Social norms and behaviour; social theory; Types of different societies; Sociology of Planning Meaning of Sociology and its basic concepts. Define such concepts as society, social actions (interactions, relationships, organizations, control and culture). Types of groups, Associations, Institutions and communities. Social Stratification. Various theorists of consensus and conflict- Marx Weber, Karl Marx, Davis. Social Problems Emanating from Urbanization process. Urbanization process. Urban –Rural Continuum with particular reference to Nigeria. Urban Rural Dichotomy. Effects of urbanization, Over- Population, Under- Population on the Urban and Rural centres. Behavioural Implications of urbanization and urbanism- violence, mental stress, delinquency.

URP 101- History and Evolution of Planning

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students shall demonstrate the following competencies:

1. illustrate a brief narrative of the concept, origin growth and development of human civilization;
2. identify the factors of urban growth;

3. give a historical account of evolution of early human settlements such as the Greek, Romans;
4. identify the problems associated with city development especially during the industrial revolution;
5. describe the contribution of philanthropists to Urban and Regional planning practice in Nigeria,
6. illustrate the historical evolution of Nigerian cities and urban and regional planning in Nigeria.

Course Contents

Evolution of historical and legislative contexts of town planning from ancient to modern times. Emergence, growth and decline of settlements as a reflection of changing social, educational, political, physical and technological factors. Survey of human settlements. The effects of philanthropic movements and pioneer thinkers and public health laws on urban and Regional planning. Urban and Regional Planning thoughts in Europe, America and Africa. Influence of nineteenth and twentieth centuries concepts on modern urban planning. The development and benefits of Urban and Regional Planning (URP) in Nigeria. Case studies of historic cities like Ibadan, Kano, Osogbo, Benin, Ife, Oyo, Lagos.

200 Level

GST 212. Philosophy, Logic and Human Existence (2 Units C: LH 30)

Learning Outcomes

A student who has successfully gone through this course should be able to:

1. know the basic features of philosophy as an academic discipline;
2. identify the main branches of philosophy & the centrality of logic in philosophical discourse;
3. know the elementary rules of reasoning;
4. distinguish between valid and invalid arguments;
5. think critically and assess arguments in texts, conversations and day-to-day discussions;
6. critically assess the rationality or otherwise of human conduct under different existential conditions;
7. develop the capacity to extrapolate and deploy expertise in logic to other areas of knowledge, and
8. guide his or her actions, using the knowledge and expertise acquired in philosophy and logic.

Course Contents

Scope of philosophy; notions, meanings, branches and problems of philosophy. Logic as an indispensable tool of philosophy. Elements of syllogism, symbolic logic— the first nine rules of inference. Informal fallacies, laws of thought, nature of arguments. Valid and invalid arguments, logic of form and logic of content — deduction, induction and inferences. Creative and critical thinking. Impact of philosophy on human existence. Philosophy and politics, philosophy and human conduct, philosophy and religion, philosophy and human values, philosophy and character molding.

ENT 211 – Entrepreneurship and Innovation (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students should be able to:

1. explain the concepts and theories of entrepreneurship, intrapreneurship, opportunity seeking, new value creation, and risk taking;
2. state the characteristics of an entrepreneur;
3. analyze the importance of micro and small businesses in wealth creation, employment, and financial independence;
4. engage in entrepreneurial thinking;
5. identify key elements in innovation;
6. describe stages in enterprise formation, partnership and networking including business planning;
7. describe contemporary entrepreneurial issues in Nigeria, Africa and the rest of the world;
8. state the basic principles of e-commerce.

Course Contents

Concept of Entrepreneurship (Entrepreneurship, Intrapreneurship/Corporate Entrepreneurship,). Theories, Rationale and relevance of Entrepreneurship (Schumpeterian and other perspectives, Risk-Taking, Necessity and opportunity-based entrepreneurship and Creative destruction). Characteristics of Entrepreneurs (Opportunity seeker, Risk taker, Natural and Nurtured, Problem solver and change agent, Innovator and creative thinker). Entrepreneurial thinking (Critical thinking, Reflective thinking, and Creative thinking). Innovation (Concept of innovation, Dimensions of innovation, Change and innovation, Knowledge and innovation). Enterprise formation, partnership and networking (Basics of Business Plan, Forms of business ownership, Business registration and Forming alliances and joint ventures). Contemporary Entrepreneurship Issues (Knowledge, Skills and Technology, Intellectual property, Virtual office, Networking). Entrepreneurship in Nigeria (Biography of inspirational Entrepreneurs, Youth and women entrepreneurship, Entrepreneurship support institutions, Youth enterprise networks and Environmental and cultural barriers to entrepreneurship). Basic principles of e-commerce.

STA 203: Statistical Methods and Sources

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of the course students are expected to:

1. Define statistical methods;
2. Demonstrate skills in measurement of the central tendencies is the analysis of basic data;
3. Illustrate skills in basic probability sampling;
4. Carry out basic hypothesis sampling tests;
5. Demonstrate skills in quantitative and qualitative statistical analysis.

Course Contents

The nature of statistical methods, Frequency distributions, measures of central tendencies – Mean, Mode and Media, Measures of Dispersion – Range, Variance, Standard deviation, Elementary Probability Theory, Binomial, Normal and Poisson Distributions. Sources of statistical data in Nigeria. Tests of Hypotheses; small sample tests – t - test, χ^2 – test and F – test;

Regression analysis; Analysis of Variance; Time series analysis; Index numbers; Sources of Statistical Data in Nigeria.

URP 201: Planning Studio I

(2 Units C: PH 90)

Learning Outcomes

At the end of the course, students are expected to:

1. identify the various urban land use forms and their peculiarities;
2. conduct a basic traffic count;
3. identify various land use conflicts;
4. carry out design as a solution to an identified land use problem;
5. write a technical report for the design.

Course Contents

To introduce the students to the urban foci of intensive activities, their functioning, location, physical structure and special problems, students will conduct relevant surveys in areas such as land use, circulation, parking, conflict points, spatial differentiation, utilities and the general environment. Existing problems like congestion, incompatible uses, encroachment, are to be emphasized and recommendations for improvement presented. In addition, a study of planning models types such as iconic, analogue, symbolic, descriptive, predictive and other related currently in existence must be examined. Each studio design must be based on a specific planning concept and accompanied by a technical report and modelling.

URP 202 Planning Studio II (2 Units C: PH 90)

Learning Outcomes

At the end of the course students are expected to:

1. Identify the residential community/neighbourhood units and its physical structure;
2. conduct surveys on household characteristics of a residential neighbourhood;
3. design a functional residential neighbourhood;
4. Describe the functional relationship of a neighbourhood;
5. Prepare a detailed housing layout and plot subdivision; and
6. Design a detailed layout of a residential neighbourhood in two and three dimensions.

Course Contents

Residential Community/Neighbourhood Design. Neighbourhood Design and Housing Layout. Concept of planned and integrated development of residential areas. Spatial differentiation into distinct units of neighbourhood, and the physical, social and functional components of the neighbourhood units, its structure and density. Design of housing layout and plot subdivision as a detailed aspect of neighbourhood planning based on relevant environmental factors (topography and vegetation). Preparation of a detailed layout of a would-be site, including quantitative projections for anticipated population densities, site occupancy, two- and three-dimensional forms.

URP 203: Planning Principle and Practice (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students are expected to:

1. identify the components of rural and urban land use;
2. illustrate the relationship between standards and the various land uses and the specialised areas;
3. demonstrate the primordial role of the concept of zoning in planning practice; and
4. illustrate the role of urban renewal techniques in slum upgrade.

Course Contents

Components of Urban and Regional Land use. Relationships between planning standard and city size, culture, transport, Building Technology. Standards for various land use including those of specialized areas, destitute centres and old people's homes, barracks, mixed land use, campuses. Concepts, objective of planning, planning process, (zoning, types of zoning/mixed land use, floating, conditional/contractual and phase zoning). Analysis and classification of urban land uses. Coding, slum and urban renewal; Techniques for identifying slums and degraded areas plus new town development. Principles and development.

URP 204: Introduction to Land Use Planning (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students are expected to:

1. describe the concepts, principles and importance of land use planning;
2. identify the determinants, principles of land use dynamics and as integrated spatial solutions for land use problems;
3. outline the various land use types; and
4. enumerate the criteria guiding the selection of an appropriate land utilization types.

Course Contents

Definitions and concepts of land and land use; The need for planning land use, Attributes of land use planning, methods of land use planning, principles of land use; land use determinants, land use dynamics and integrated spatial solutions for problems on different scales. Area-oriented integration of various tools for land use planning, regional and environmental management, Agricultural/rural land use planning: Models of land use planning; problems of land use planning in Nigeria.

URP 205 Introduction to Land Surveying (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course the students should be able to:

1. identify the various survey instruments and their uses;
2. carry out the operation of perimeter survey of a small area;
3. write a report and undertake basic map operations; and
4. Illustrate a historical overview of the development of survey methods and instruments.

Course Contents

Introduction and historical review of the development of survey methods and instruments. The practical and theoretical use and adjustment of the clinometers, optical square, prismatic compass, sextant, Theodolite and tachometer precision, dumpy and abney level line ranging and offset measurement. Chain surveys, plane table prismatic compass and Theodolite surveys.

Levelling, plotting sections and contouring. Setting out works and computation of area. The use of ordinance maps and their grid system. Preparation and enlargement of plans.

URP 206: Introduction to Remote Sensing (2 Units C: LH 15; PH 45)

Learning Outcomes

Upon completion of this course, students would be able to:

1. give a description of the concept of obtaining information on objects from a distance without coming into contact with the object;
2. illustrate a historical evolution of Remote Sensing from the earlier period till date;
3. describe the physical basis for remote sensing;
4. identify the various remote sensing platforms;
5. differentiate between active and passive sensors;
6. identify the basic elements of photo interpretation; and
7. process digitally a satellite image and digitize some of the features.

Course Contents

Elements of remote sensing system, techniques of remote sensing. Visual interpretation of imageries, digital image analysis, remote sensing application, interpretation of remote sensing and GIS in Planning research, case studies. An overview of Remote Sensing Technology. The concept of Remote Sensing, Electromagnetic radiation (EMR), Physical Basis for Remote Sensing System and EM wavelength regions. Historical Evolution of remote sensing, Early Development and Modern History. Remote Sensing Platforms, Ground based platforms, Aerial platforms, Photography and Satellites remote sensing. Sensor Technology Passive/Active Sensing, Characteristics of Sensors and Advantages and disadvantages. Principles of image and Photo interpretation, Elements of photo/image interpretation, Aids to image interpretation and advantages of Remote Sensing.

URP 208: Site Selection and Planning (2 Units C: LH 15; PH 45)

Learning Outcomes

At the conclusion of this course, students should be able to:

1. state the principle guiding site selection;
2. identify factors to be considered in selecting a site; and
3. carry out a practical exercise of site survey, selection, analysis and design based on standards.

Course Contents

Concepts, process, principles and factors of site selections, purpose of site selection: natural, cultural and factors plus criteria for selection. Grading and earthwork; gradient, method of earthwork calculations. Movement system and land uses: vehicular circulation system, street patterns, technical subdivision regulation: Concept, layout subdivision regulations, zoning regulations-residential, elements of landscaping; Basic consideration for landscaping, natural and manmade elements, organization, plant selection trees, shrubs, hedges, grass, water plants.

URP 210: Urbanisation and Population Studies (2 Units C: LH 30)

Learning Outcomes

After the conclusion of this course, students would be able to:

1. explain the world demographic trends and its characteristics and movements;
2. analyse world population composition;
3. identify the types and causes of population movement trends;
4. illustrate the process and method of population estimation and forecast; and
5. describe urbanisation and its impact on African economic development.

Course Contents

World population growth and distribution. Demographic and cultural characteristics. Types and causes of population movements, population composition and its analysis for the existing situation. Balanced population and prevalent trends. Estimation of current population characteristics and factors used in forecasting. Methods of population forecasting, trend projection, regression, ratio and apportionment, migration and natural increase growth composition analysis, matrix of framework and a locative forecasting methods. African cities in the context of the central place theory; city development in Pre-industrial Pre-colonial times; City development in post –colonial times; the nature and process of urbanization in Africa; Urbanization and the city system,; Cities and African development.

300 Level Urban and Regional Planning

GST 312- Peace and Conflict Resolution (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the concepts of peace, conflict and security;
2. list major forms, types and root causes of conflict and violence;
3. differentiate between conflict and terrorism;
4. enumerate security and peace building strategies; and
5. describe roles of international organisations, media and traditional institutions in peace building.

Course Contents

Concepts of Peace, Conflict and Security in a multi-ethnic nation. Types and Theories of Conflicts: Ethnic, Religious, Economic, Geo-political Conflicts; Structural Conflict Theory, Realist Theory of Conflict, Frustration-Aggression Conflict Theory. Root causes of Conflict and Violence in Africa: Indigene and settlers Phenomenon; Boundaries/boarder disputes; Political disputes; Ethnic disputes and rivalries; Economic Inequalities; Social disputes; Nationalist Movements and Agitations; Selected Conflict Case Studies – Tiv-Junkun; ZangoKartaf, Chieftaincy and Land disputes. Peace Building, Management of Conflicts and Security: Peace & Human Development. Approaches to Peace & Conflict Management (Religious, Government and Community Leaders). Elements of Peace Studies and Conflict Resolution: Conflict dynamics assessment Scales: Constructive & Destructive. Justice and Legal framework: Concepts of Social Justice; The Nigeria Legal System. Insurgency and Terrorism. Peace Mediation and Peace Keeping. Peace & Security Council (International, National and Local levels) Agents of Conflict resolution –

Conventions, Treaties Community Policing: Evolution and Imperatives. Alternative Dispute Resolution, ADR. Dialogue b). Arbitration, c). Negotiation d). Collaboration. Roles of International Organizations in Conflict Resolution. (a). The United Nations, UN and its Conflict Resolution Organs. (b). The African Union & Peace Security Council (c). ECOWAS in Peace Keeping. Media and Traditional Institutions in Peace Building. Managing Post-Conflict Situations/Crisis: Refugees. Internally Displaced Persons, IDPs. The role of NGOs in Post-Conflict Situations/Crisis

ENT 312 – Venture Creation

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of this course, students, through case study and practical approaches, should be able to:

1. describe the key steps in venture creation;
2. spot opportunities in problems and in high potential sectors regardless of geographical location;
3. state how original products, ideas, and concepts are developed;
4. develop business concept for further incubation or pitching for funding;
5. identify key sources of entrepreneurial finance;
6. implement the requirements for establishing and managing micro and small enterprises;
7. conduct entrepreneurial marketing and e-commerce;
8. apply a wide variety of emerging technological solutions to entrepreneurship; and
9. appreciate why ventures fail due to lack of planning and poor implementation.

Course Contents

Opportunity Identification (Sources of business opportunities in Nigeria, Environmental scanning, Demand and supply gap/unmet needs/market gaps/Market Research, Unutilised resources, Social and climate conditions and Technology adoption gap). New business development (business planning, market research). Entrepreneurial Finance (Venture capital, Equity finance, Micro finance, Personal savings, small business investment organizations and Business plan competition). Entrepreneurial marketing and e-commerce (Principles of marketing, Customer Acquisition & Retention, B2B, C2C and B2C models of e-commerce, First Mover Advantage, E-commerce business models and Successful E-Commerce Companies,). Small Business Management/Family Business: Leadership & Management, Basic book keeping, Nature of family business and Family Business Growth Model. Negotiation and Business communication (Strategy and tactics of negotiation/bargaining, Traditional and modern business communication methods). Opportunity Discovery Demonstrations (Business idea generation presentations, Business idea Contest, Brainstorming sessions, Idea pitching). Technological Solutions (The Concept of Market/Customer Solution, Customer Solution and Emerging Technologies, Business Applications of New Technologies - *Artificial Intelligence (AI)*, *Virtual/Mixed Reality (VR)*, *Internet of Things (IoTs)*, *Blockchain*, *Cloud Computing*, *Renewable Energy among others*. Digital Business and E-Commerce Strategies).

URP 301 Planning Studio III

(2 Units C: PH 90)

Learning Outcomes

At the end of the course, students are expected to:

1. describe the concept of transportation planning and how it could be integrated into development and other land use functions;
2. identify the methodologies, techniques and models of traffic and transportation planning;
3. conduct surveys on traffic, parking and accident; and
4. describe principles and analytical techniques of urban traffic planning design to solve identified transport problems.

Course Contents

Traffic and Transportation Planning and Design. Studio project in traffic and transportation planning in a small town or a part of a city. Applications of principles and analytical techniques of urban traffic planning. Traffic surveys; O-D surveys, cordon counts, parking surveys and accident surveys. Analysis and presentation of traffic data; forecasting future traffic; transportation networks planning and traffic routing; road geometric design, carry a design to solve an identified traffic problem in the society.

URP 302: Planning Studio IV

(2 Units C: PH 90)

Learning Outcomes

Upon completion of this course, students are expected to:

1. conduct a survey of a chosen core area based a reconnaissance and well-structured questionnaire;
2. survey and carry out an urban renewal design to solve the identified problems of the area; and
3. describe the cost, benefits and management of urban schemes.

Course Contents

Urban renewal and assessment of housing needs, housing problems and devising of appropriate solution. Goals, principles and methods of urban renewal. Social culture and socio- economic effects of urban renewal. costs and benefits of urban renewal schemes. Management of urban schemes. Case studies of urban renewal schemes. Students are therefore expected to conduct preliminary field survey, carry out a design of questionnaires, collect data, analyse and come up with a design as a solution to urban decay in a core area of a chosen inner city.

URP 303: Housing Studies

(2 Units C: LH 30)

Learning Outcomes

At the conclusion of this course, students should be able to:

1. illustrate competences in the concepts of housing delivery systems, standards;
2. housing policies in Nigeria and their relationships to town planning process;
3. demonstrate competencies in Housing needs and demand;
4. illustrate a basic housing delivery scheme system; and

5. describe a policy formulation framework to meet special and general housing needs.

Course Contents

Housing needs, demand and supply. Basic principles guiding housing standards; housing finance; investment by public, private and cooperative sectors, subsidies, loans and mortgage funds. Characteristics of Housing in Nigeria: design methods, construction materials, maintenance, forms and functions of elements. Housing policy: objectives and programmes. Appraisal of existing housing options in Nigeria. Case studies – planned public housing, planned private housing and traditional housing. The universality of the housing problem. Classification of dwellings by building, materials, location, tenure and design variables. Assessing housing needs and demand in quantitative terms. Population structure, household, characteristics of housing, housing delivery systems.

URP 304: Planning Theory

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students are expected to:

1. illustrate the philosophy, nature, limit, scope and framework for planning theory;
2. explain the theories of planning and theories in planning;
3. describe the philosophy of town planning evolution; and
4. explain the planning process in relation to town planning; and state the role of citizen's participation in planning.

Course Contents

The purpose, philosophy and nature of planning. The scope and limit of urban and regional planning. Framework for planning and the political, social and economic variables. Ethics and social justice in planning and rising conflicts. Theories in/for planning and theories of planning. The nature of planning theory. Theory of planning and theory in planning. Normative descriptive, and prescriptive theories of planning. Evolution of town planning philosophy. The planning process, management and decision – making in planning process; the dynamic of political, social, cultural and economic variables. The planner's role and functions. Citizen's participation and evaluation in the planning process.

URP 305: Regional Planning

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students are expected to:

1. illustrate the concept of Regional Development and planning,
2. explain the relevance of these theories to Regional Planning: Central Place Theory; Growth Pole and Growth Centre Theory; and
3. describe the role of transportation and information flows in Regional Development Planning.

Course Contents

Nature of regional planning and regional development. Formal, functional, administrative and planning regions, their unifying characteristic; the regional planning process; delineation techniques, analysis of regional change and growth, economic base theory, spatial and economic structure analysis of regions, goals formation surveys and analysis, preparation of the regional plan, regional plan implementation, monitoring and evaluation.

URP 306: Planning Model making Workshop**(2 Units C: PH 90)****Learning Outcomes**

At the end of the course students are expected to:

1. identify the various tools and their uses,
2. how to care for the tools;
3. carry out practical exercises individually and in groups on the rudiments of model making using hand-made and machines tools in three dimensions; and
4. produce models of schools, churches, mosques and schools.

Course Contents

Model making techniques, tools and materials, use and care of tools, workshop practices. Procedure and guide for models making, Preparation of three-dimensional planning models and map models such as residential areas, neighbourhood centres, community centres, hospitals, primary and secondary schools.

URP 307: Transportation Planning I**(2 units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course, students will be able to:

1. identify the challenges of traffic and transportation in urban centres;
2. develop basic skills in traffic survey for urban transportation planning; and
3. illustrate competence in traffic control strategies for averting traffic congestion in urban areas.

Course Contents

Role of transportation in urban and regional planning: traffic generation as a function of land use: mode of transportation of goods, services, and people-characteristics and performances. Relationship between transportation planning and land use planning. Methods of collection, analysis, interpretation and projection of traffic data, traffic problems and control problems, control measures and management problems of organization and regulation of public transport. Introduction to road geometric and design of intersections. Introduction to traffic control systems and management. The accompanying workshop assignment will include basic surveys analysis, interpretation, synthesis and application of results in a variety of situations like road intersection and parking areas.

URP 308: Urban Design**(2 Units C: LH 15; PH 45)****Learning Outcomes**

At the end of the course students are expected to:

1. identify the elements of urban design as it relates to the quality of the environment;
2. state the principles and methods of urban design in relation to human settlement; and
3. conduct field or case studies of major types of large-scale projects such as the design of community or the city centre.

Course Contents

Introduction to urban design and its relationship to urbanization. Elements of Urban design and their impact on the quality of environment. A general study of urban design of human settlements during the early times. Ancient, Medieval, Renaissance, Baroque, Evolution of industrial settlements and contemporary human settlements. The effects of new movements in civic design and town planning, Examples of traditional urban design characteristics of Nigerian cities.

URP 309: Quantitative Techniques and Methods in Planning (2 Units C: LH 30)

Learning Outcomes

At the end of the course students are expected to:

1. develop competences in various techniques in data analysis;
2. demonstrate skills in quantitative methods; and
3. illustrate competences in statistical tools for making spatial decisions.

Course Contents

Estimate of current population characteristics and factors used in forecasting. Methods of population forecasting, trend projection, regression, ratio and apportionment, migration and natural increase growth composition analysis, metric of framework and allocative forecasting methods. Introduction to quantitative method, time series analysis, regression analysis, index numbers, linear programming and transportation network. Analysis of variance, scaling techniques, types of scales, social distance, social-metric measurement. Frequency distribution, comparison and complex tables. Statistical tests of hypothesis, mathematical models used in town planning simulation models, headship rate model, gravity model, rent model and demands models.

URP 314: Principles of Landscape Design (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course. students are expected to:

1. state the concept, definition and scope of landscape planning;
2. identification of basic elements and principles of landscape design;
3. outline the factors influencing the landscape evaluation and design process;
4. apply the design and evaluation techniques consideration for a sustainable managed landscape.

Course Contents

Concept in landscape planning and design; Basic elements of landscape; History of landscape planning; Definition and scope of landscape planning, design and basic elements of landscape. Principles of landscaping. Landscape design process (site survey, site analysis, detailed design and implementation) factors influencing landscape design. Landscape evaluation techniques. Typology of human landscape. Landscape design consideration for housing, shopping, institutional, industrial, roads, agricultural, forestry, mining, outdoor recreation spaces, open spaces, urban parks and tourist development. Management of landscape.

URP 316: Principles of GIS and AutoCAD (2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students are expected to:

1. illustrate fundamental concepts of GIS especially its components and functionality;
2. identify the various GIS data and their sources;
3. identify the various GIS operational functions;
4. analyze the various components of the integrated technologies such as the Global positioning System (GPS);
5. state the functions and areas of application in human development; and
6. describe spatial GIS operations such as scanning geo-referencing, geocoding and map projections.

Course Contents

Introduction to GIS basic principles; GIS components; Subsystems; the basic concepts of space (spatial modelling); components of a spatial database, spatial data model; Geoinformatics tools. Introduction to GIS. Hardware and software requirements of GIS. Database management structure and formats. Vector data structure. Raster data structure. Data imputing, editing and topology in GIS. Integration of spatial and non-spatial data. Spatial data analysis (vector-based) and spatial data analysis (raster based). Remote sensing and GIS data integration. Application of GIS and Remote Sensing in Urban and regional planning-residential, commercial, transportation, recreational, open space and many others.

400 Level Urban and Regional Planning

URP 401: Planning Studio V (2 Units C: PH 90)

Learning Outcomes

At the end of the course students are expected to:

1. conduct field survey of a small and medium size settlement;
2. collect data, analyse and prepare a design taking into consideration the future;
3. produce an AutoCAD Map of a city; and
4. produce a two- and three-dimensional representation of the design.

Course Contents

Comprehensive Urban Planning: Introduces the students to the concepts of comprehensive urban development and its application to small and medium size settlements, field survey, data collection, analysis of data and projection models, development criteria including plan goals and objectives, master plan for the future growth of the settlement, AutoCAD and modelling. Production of a regional master plan.

URP 405: Professional Planning and Practice (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students are expected to:

1. outline the concepts and skills of profession in relation to Urban and Regional Planning;

2. illustrate the skills and requirements for the practice of the profession of Urban and Regional Planning; and
3. identify what it takes to work as Town Planner.

Course Contents

The ethics of preparing land use/master plans: Principles of writing planning briefs, pitfalls in planning, communication, technical reporting and graphic technique. The roles of the planner in government and the private sector are defined in relation to planning responsibility and the decision-making process. The organization of the planning office, the selection of an interdisciplinary team and management and leadership techniques. Planning office procedures, contract terms, conditions and agreements. Preparation and submission requirements for a proposed project. Procedures for project team selection. Stages of project approval, nomination and assessment of project by various authorities. The structure of fees, code of conduct and professional ethics.

URP 406: Planning Law and Administration (2 Units C: LH 30)

Learning Outcomes

At the end of the course. students are expected to:

1. equipped with skills in the laws and procedures guiding the practice of physical planning activities in the country;
2. describe the administrative functions of Planning law and administrative office;
3. give an illustrative account of the origin of Town and Country Planning Law in Nigeria;
4. establish the relationship between Town and Country Planning Law in Nigeria and other countries;
5. identify steps involve in the execution of planning schemes, acquisition of land for development and compensation; and
6. describe the organizational procedure and practice in urban and regional planning office.

Course Contents

Purpose and legal basis of planning legislation in Nigeria; General introduction to the legal process of legislation, contract, adjudication and the concept of justice; A review of the evolution of law relating to land and urban and regional planning in Nigeria; A critical review of some urban and regional planning laws an acts, Urban Renewal Act, Anti-Pollution Act; Recent trends in planning legislation; Land tenure and land policy; A review of the misuse of fundamental rights under the Nigeria constitution relating to land, land development. The Land Use Act, its provisions, limitations and implications for planning, building by-laws and their applications to regulate urban growth and direct development; Legal aspect of review and approval process of land use plans. Planning laws as a mechanism for solving urban problems of health, congestion and pollution. Introduction to the elements and principles of administration, political structure and bureaucracy. The structure of federal, State and Local Governments; Their planning scope and functions; Functions, power structures and resources of Administration of inter-regional and intra-regional planning. Management and decision making at various levels and within parastatals and line ministries; the administration of implementation of Urban Development plans; the legal provisions, the administrative structure and financing.

URP 408: Development Control**(2 Units C: LH 30)****Learning Outcomes**

At the end of the course, students shall demonstrate the following competencies:

1. outline the various strategies for development control;
2. identify the laws and regulations guiding development control in the cities and rural areas;
3. State the procedure for planning application, appeals, enforcement and arbitration;
4. Illustrate the procedure for the preparation and publication of awards; and
5. State the method for the enforcement impeachment of award.

Course Contents

The various strategies of development control; the mechanics of control; Laws, Codes, Regulations and standards; development plans/schemes and their implementation. Planning applications; consents; appeals; enforcement procedures of arbitration submission. Appointment of arbitration, rules of evidence. Preparation and publication for awards; Methods of enforcing and impeaching an award. Reference by order of the court statutory arbitration.

URP 421: SIWES**(15 Units; C; PH 675)****Learning Outcomes**

At the end of this course, students are expected to:

1. acquire practical skills to complement the theory aspect of their training;
2. perfect their skills in GIS, remote sensing and AutoCAD which they are expected to apply in their final year project geared towards solving planning problems of the human society; and
3. submit and defend a technical report.

Course Contents

Students are expected to spend six (6) months of the second semester of 400 level for practical work experience in any organization of their choice relevant to Urban Regional Planning profession. They are to participate in activities such as map making, planning practices, land survey, GIS and Remote sensing, Land, human and socio-economic surveys, basic field operations, equipment and facilities and any related assignments. They are to be supervised and a technical report is expected to be submitted for assessment after an oral defence has been completed by the students.

500 Level**URP 501: Planning Studio VI****(2 Units C: PH 90)****Learning Outcomes**

At the end of this course, students are expected to:

1. demonstrate competences in Central Areas' Planning/Urban Design;
2. illustrate skills in Methodology and techniques of designing central areas of towns and city;
3. conduct surveys to delineate the central area and its sphere of influence;
4. identify its functions and problems such as traffic, land-use density; and
5. carry out the planning, redesigning, redevelopment in two and three dimensions of central areas within an identified urban area in regional context.

Course Contents

Projects on city centre renewal and devising appropriate planning solutions with emphasis on the urban metropolitan core area. Methods and techniques of preparing local plans, briefs should include; a case study of a particular metropolitan area, survey of identified area, design of questionnaires, data collection, analysis and presentation of findings and presentation of technical reports to be submitted after presentations to the external examiner. The presentations which must be in AutoCAD or GIS, must be in 2D and 3D; and accompanied by a model of the improved situation of the metropolitan area.

URP 502: Planning Studio VII

(2 Units C: PH 90)

Learning Outcomes

At the end of the course, students are expected to:

1. Conduct a reconnaissance survey of new towns;
2. prepare a design for a New Town and capital city and their respective master and structure plans;
3. demonstrate the socio-cultural, environmental and aesthetics characteristics in the design of New towns; and
4. synthesis of design concepts and techniques applicable to pre-planned new settlements in Nigeria.

Course Contents

Field survey, data collection, analysis and production of a new town, The design of new towns and capital cities and their respective master and structure plans. Socio-cultural, environmental and aesthetic considerations of settlement design. The studio project will synthesize design concepts and design techniques applicable to pre-planned new settlements in Nigeria. Produce a two- and three-dimensional perspectives of the design new town.

URP 508: Project Planning and Implementation

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students are expected to:

1. demonstrate skills and competences in the following;
2. illustrate globally in-depth knowledge in rural water demand and supply;
3. outline the impact of urbanisation on water demand and supply;
4. explain the design and strategies for rural and urban water supply and sanitation; and
5. provide a on public policies, MDGs and SDGs on water and sanitation in Nigeria.

Course Contents

The course will include the process of project planning-phasing time scheduling, financing, budgeting and manpower assessment, techniques of project appraisal, project evaluation and project plan administration. Administration of inter-regional and regional planning. Management and decision-making at various levels and within practical. The administration and implementation of urban physical plans; the legal provision, the administrative structure and financing the implementation of the urban physical plan. Urban physical plan, information systems and techniques of reporting, evaluation and review of plans. Urban land policy and management.

URP 511 Entrepreneurship

(2 Units C: LH 15; PH 45)

Learning Outcomes

At the end of the course, students are expected to:

1. undertake specific projects in a chosen area of entrepreneur and problem-solving skills to address specific planning and environmental problems which could enhance their employability.

Course Contents

Urban and Regional Planning is a highly multi-faceted and multi-disciplinary academic pursuit. The first-degree programme exposes students to all aspects of Town Planning but allow them to pursue special areas of interest towards the end of the programme. Such areas include Land Use Planning, Metropolitan Planning, Urban Design, Regional Planning, Urban Management, Planning Model Making. This makes it difficult to mount a single course in entrepreneurship in the last year of study. There are six areas that lead themselves to a highly successful entrepreneurial development in Urban and Regional Planning, viz: Student are to acquire general and specific Entrepreneurship skills. Therefore, students are also required to take at least one area of the following entrepreneurship areas;

1. Advocacy planning, Representation of Client in Town Planning, Development Control Offices and the Urban and Regional Planning Tribunals;
2. Collection and processing the urban information for use by various interest groups in the city including Local and State Governments, Transport Authorities, Traffic Management Authorities and Institutions of higher learning;
3. Urban Landscape Planning and Design where students will acquire basic skills in elements of Horticulture;
4. Generation and processing of Urban Management Information System. Street Naming and Property Numbering Techniques. Methods of delineating urban wards, neighborhoods and districts;
5. Planning Model Making such as 3-dimensional presentation techniques;
6. GIS and its application to Urban Planning and Development; and
7. Urban Management and Utility Planning just to name but a few.

URP 512: Project/Dissertation

(4 Units C: PH 180)

Learning Outcomes

At the end of the course, students are expected to:

1. demonstrate competences and research skills in a chosen well research topic demonstrating all the acquired knowledge over the years with well;
2. illustrated diagrams and maps of final work; and
3. application of GIS, AutoCAD, Remote sensing and data analysis skills in final work.

Course Contents

Every student is required to undertake a research study on any chosen topic as a special area of study in the planning profession to demonstrate their ability to carry out an independent work making contribution to knowledge with the guidance of an academic staff. Students are to choose their subjects in due consultation with their supervisors. The examination will be conducted with a viva, which will be attended by the external examiner.

Minimum Academic Standards

Resource Requirements for Teaching and Learning

Personnel

The personnel requirements for each of the programmes should reflect student population and the variety of activities to be performed in the classrooms, studios, laboratories and workshops. The ratios should conform to the NUC minimum guidelines on staff/student ratio of 1:15 for the Discipline.

Academic Staff

The point of entry for each of the recognized academic positions should reflect appropriate academic qualifications, and experience in both teaching and professional practice. Details of the requirements for the various positions are indicated below:

Academic Support Personnel

Teaching Assistant/Demonstrators are recommended to assist lecturers in the conduct of tutorials, practicals and fieldwork.

Administrative Support Personnel

The services of the administrative support staff are indispensable in the proper administration of the departments and faculty offices. These will normally include confidential secretaries, clerical officers, typists, messengers and cleaners. It is important to recruit very competent senior personnel who are technology savvy.

Technical Support Personnel

The technical support personnel shall consist of technical officers and technologists. It is important to recruit very competent senior technical staff to maintain teaching and research equipment.

Standards for Physical Facilities

Spaces

For the good administration of each programme, adequate facilities should be provided for the office of the Dean and for each of the departments. The required minimum standards for each of the programmes are reflected in the relevant sections for each programme. Spaces will normally include:

1. Office Accommodation
2. Classroom Space
3. Studio Space
4. Seminar Rooms
5. Drawing Offices
6. Workshop Spaces including Model making workshops
7. Library
8. GIS/Computer Laboratories

In the case of the Office of the Head of the Department (HOD), office accommodation should be provided as follows:

1. HOD's Space
2. Secretary to the HOD or Departmental Secretary
3. Administrative Assistant
4. General Office
5. Conference Room

Classrooms, Laboratories Clinics Workshops and Offices

	Space	Use	Minimum (m²)
1.	Professors Office	Academic	24
2.	Head of Department	Administration	24
3.	Senior Lecturer	Academic	20
4.	Lecturer	Academic	16
5.	Assistant Lecturer	Academic	12
6.	Senior Technical Staff	Technical	12
7.	Senior Administrative Staff	Administration	12
8.	Junior Technical Staff	Technical	10
9.	Junior Administrative Staff	Administration	10
10.	Studio Space	Students	30
11.	Lecture Space	Students	75
12.	Seminar Space	Students	30
13.	Laboratory Space	Students	30
14.	Library	Students	35
15.	Social Space	Students	40
16.	Storage Space	Students	30

Equipment

The programme should be provided with requisite laboratories, field works and camping exercise with relevant equipment in relation to student population and variety of activities performed in the programme. To achieve the benchmark standards for any programme, there should be provision of at least one (1) equipment for every five (5) students for a particular type of equipment. That is, there should be one theodolite for every five students, one computer for every five students, one GPS receiver for every five students and so on. To achieve the benchmark standards for the programme, there should be:

1. A minimum number of well-equipped laboratories for the programme that meet the minimum space standards for the particular programme.
2. Well-equipped drawing and design studios in accordance with the above recommended space requirements.

Implementation of the program requires the following equipment;

1. Fully automated GIS Laboratories **not computer Laboratories**, with up-to-date software such as ARCGIS, AUTOCAD Map and hardware such drones for mapping, A3 scanners and printers/ plotters just to name but a few.

2. The Model Making Workshops should be equipped with the state-of-the-art facilities and equipment to meet changing global technological needs.
3. The workshops must be spacious enough for students work individually and in groups.
4. At the end of each academic year the department in collaboration with the university and the entrepreneur unit should organise an exhibition to showcase some of the problems driven solutions they have researched and brought. Captains of industries, chief executive of parastatals, Local Government Chairmen and environmentalists should be invited to key in for implementation of good ones.
5. List of Equipment required in GIS, Environmental Laboratory and Drawing Studio include; Topographic maps, Theodolite, Prismatic compass, Abney level, Hand held Global Positioning System, Cross staff, Lighting Tables, measuring tapes, Plane table equipment, ranging poles, Graduated hand-held soil auger, Drawing Tables, T-Squares, Set Squares, Set of Rotring pens, Set Pencils, HB, 2H; Drawing sets; Projector; Interactive Screen; Tracing paper among others.