

Building Technology - National Diploma (ND)

Curriculum and Course Specifications

National Board for Technical Education

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PLOT B, BIDA ROAD, P.M.B. 2239 KADUNA – NIGERIA

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General Information

1.0 CERTIFICATION AND TITLE OF PROGRAMME:

The certificate to be awarded and programme title shall read:

“NATIONAL DIPLOMA IN BUILDING TECHNOLOGY”. A statement showing all the courses taken and grades obtained shall be issued together with the certificate.

2.0 GOAL AND OBJECTIVES:

The National Diploma programme in Building Technology is aimed at producing technicians that are capable of performing basic functions in Building Technology Practice both in private and public sector.

The objectives are to produce a diplomate that will assist the professional Builder in the areas of:

1. Production of simple buildings.
2. Maintenance of simple buildings
3. Management of Small projects.
4. Costing of simple construction works.
5. Cost control techniques in minor construction and engineering works.
6. Selection of materials and techniques for new building systems.

3.0 ENTRY REQUIREMENTS:

Applicants with any of the following qualifications may be considered for admission into the National Diploma programme by direct entry.

- a. S.S.S.C or its equivalent (N.T.C, WASC, GCE O’Level) with credit in Physics and Mathematics and any other two subjects from the following: Further Mathematics, Fine Art/Technical Drawing, Geography, Economics, English Language, Chemistry/Biology, Agricultural Science obtained at not more than two sittings. Candidates are expected to have at least a pass in English Language.
- b. Four credit passes in relevant subjects as stated in (1) above obtained at the final examination of an NBTE recognized preliminary ND programme offered in a polytechnic or similar post-secondary technical Institution.

4.0 CURRICULUM

4.1 The curriculum of the ND programme consists of four main components. These are:

- (i) General Studies/Education.
- (ii) Foundation Courses.
- (iii) Professional Courses
- (iv) Supervised Industrial Work Experience Scheme (SIWES).

4.2 The General Education component should include courses in Art and Humanities - English language, Citizenship Education, Social Studies - Citizenship (the Nigerian Constitution), Political Science, Sociology, Philosophy, Geography and Entrepreneurship. The General Education component shall account for not more than 15% of total contact hours for the programme.

4.3 Foundation Courses include courses in Economics, Mathematics, Pure Science, Technical Drawing, Descriptive Geometry, Statistics etc. The number of hours will vary with the programme and may account for about 10-15% of the total contact hours.

4.4 Professional Courses are courses which give the student the theory and practical skills he needs to practice his profession at the technician/technologist level. These may account for between 70-80% of the total contact hours.

4.5 Supervised Industrial Work Experience Scheme (SIWES) shall be taken during the long vacation following the end of the second semester of the first year. See details of SIWES at paragraph 11.0

5.0 STAFFING

5.1 For ND programme only, the minimum requirement will be five (5) teaching staff with at least one Senior Lecturer and one Lecturer I.

5.2 For ND and HND combined programmes, the minimum requirement will be seven (7) teaching staff with at least one chief/Principal Lecturer, 2 Senior Lecturer, 2 Lecturer I.

5.3 The Person appointed to head the Department of Building Technology both ND and HND programmes must be a corporate member of NIOB and registered with CORBON in addition to the existing academic qualification.

6.0 FACILITIES:

6.1 Workshop and Laboratories:

6.1.1 The Building Technology workshops must be available and functional (Carpentry Workshop, Workshop, Painting and Decorating Workshop, concrete Workshop and Plumbing Workshop).

6.1.2 The Mechanical and electrical Workshops must be available and functional.

6.1.3 The civil Engineering Structure/Maintenance Services, Laboratories must exist and be functional.

6.1.4 The Computer Centre must exist and be functional.

6.1.5 In addition to the provision of these physical facilities, the appropriate technologists and technicians must be available in line with the existing NBTE specification/requirements.

6.2 Offices and Classrooms

6.2.1 Functional offices which are well equipped with furniture, fans and air-conditioners should be provided for all staff. All staff on the rank of Senior Lecturer and above should have individual offices and others should not be more than two in an office. They should be furnished with writing desks and chairs, visitor chairs and bookshelves. In addition to the above, the Head of Departments should have Easy Chairs with Centre Table, Filing cabinets, Refrigerators, and Rug Carpet.

6.2.2 Adequate classrooms which are well equipped with Chairs and Tables, together with teaching boards should be provided. A minimum of four classrooms should be provided for the ND and HND programmes.

6.3 CURRICULUM STRUCTURE OF THE ND PROGRAMME

The structure of the ND programme consists of four semesters of classroom, laboratory and workshop activities in the college - and a semester (3-4 months) of supervised industrial work experience scheme (SIWES). Each semester shall be of 17 weeks duration made up as follows:- 15 contact weeks of teaching i.e. lecture, recitation and practical exercises, etc. and 2 SIWES shall take place at the end of the second semester of the first year.

7 ACCREDITATION

Each programme offered at the ND level shall be accredited by the NBTE before the diplomas can be awarded the diploma certificates. Details about the process of accrediting a programme for the award of the ND are available from the Executive Secretary (at the Programmes Department). National Board for Technical Education.

8 CONDITIONS FOR THE AWARD OF THE ND.

Institutions offering accredited programmes will award the National Diploma in Building Technology to candidates who successfully complete the programme after passing prescribed coursework, examinations, diploma experience. Such candidates should have completed a minimum of 72 semester credit units.

9 GUIDANCE NOTES FOR TEACHERS TEACHING THE PROGRAMME

9.2 The new curriculum is drawn in unit courses. This is in keeping with the provisions of the National Policy on Education which stress the need to introduce the semester credit units which will enable a student who so wish to transfer the units already completed in an institution of similar standard from which he is transferring.

9.3 In designing the units, the principle of the modular system by product has been adopted, thus making each of the professional modular, when completed provide the student with technician operative skills, which can be used for employment purposes.

9.4 As the success of the credit unit system depends on the articulation of programmes between the institutions and industry, the curriculum content has been written in behavioural objectives, so that it is clear to all, the expected performance of the student who successfully complete some of the courses of the diplomats of the programme.

There is a slight departure in the presentation of the performance based curriculum which requires the conditions under which the performance are expected to be carried out and the criteria for the acceptable levels of performance. It is a deliberate attempt to further involve the staff of the department teaching the programme to write their own curriculum stating the conditions existing in their institution under which the performance can take place and to follow that with the criteria for determining an acceptable level of performance. Departmental submission of the final curriculum may be vetted by the Academic Board of the institution.

Our aim is to continue to see to it that a solid internal evaluation system exists in each institution for ensuring minimum standard and quality of education in the programme offered throughout the polytechnic system.

9.5 The Teaching of the theory and practical work should, as much as possible, be integrated Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory. For each course, there should be a balance of theory to practice depending on the course and contents.

10 GUIDELINE OF SIWES PROGRAMME

For the smooth operation of the SIWES, the following guidelines shall apply:

11.1 Responsibility for Placement of Students

(i) Institutions offering the ND Programme shall arrange to place the students in industry. By April 30 of each year, six copies of the master list showing where each student has been placed shall be submitted to the Executive Secretary, NBTE which shall, in turn, authenticate the list and forward it to the Industrial Training Fund.

(ii) The Placement Officer should discuss and agree with industry on the following:

- a. A task inventory for what the students should be expected to experience during the period of attachment. It may be wise to adopt the one already approved for each field. An industry-based supervisor of the students during the period, likewise the institution based supervisor;
- b. The evaluation of the student during the period. It should be noted that the final grading of the student during the period of attachment should be weighted more on the evaluation by his industry based supervisor.

11.2 Evaluation of Students During the SIWES

In the evaluation of the students, cognisance should be taken of the following items:

- (i) Punctuality.
- (ii) Attendance.
- (iii) General Attitude to work.
- (iv) Respect for Authority.
- (v) Interest in the Field/technical area.
- (vi) Technical competence as a potential technician in his field.

11.3 The Institution-Based Supervisor:

The institution-based supervisor should initial the log book during each visit. This will enable him to check and determine to what extent the objectives of the scheme are being met and to assist students having any problems regarding the specific assignments given to them by their industry-based supervisor.

11.4 Frequency of Visit

Institution should ensure that students placed on attachment are visited within one month of their placement. Other visits shall be arranged so that:

- 1) There is another visit six weeks after the first; and
- 2) a final visit in the last month of the attachment

11.5 Stipend For Students in SIWES

The rate of stipend payable shall be determined from time to time by the Federal Government after due consultation with the Federal Ministry of Education, the Industrial Training Fund and NBTE.

11.6 SIWES AS A COMPONENT OF THE CURRICULUM

The completion of SIWES is important in the final determination of whether the student is successful in the programme or not. The SIWES should be graded following the normal grading system adopted by the Institution. Where a student is judged to have failed the SIWES, he should repeat another four months SIWES at his own expense.

11.7 COMPUTATION OF FINAL RESULT

A computation of second semester result of the second year shall include the grade scored by the student at SIWES.

Curriculum Table

YEAR OF STUDY: YEAR ONE

SEMESTER ONE

Course Code	Course Title	L	T	P	CU	CH	Pre-require
BLD 101	Building Science & Properties of Materials 1	1	1	2	2	2	-
BLD 103	Building Construction I	2	1	3	3	3	-
BLD 105	Workshop Practice & Technology I	-	0	4	2	4	-
BLD 107	Technical Drawing	1	-	3	2	4	O/L Tech Drg
TSL 101	Basic Principles in Surveying I	1	-	3	2	4	Maths & Phy.
MTH 111	Logic and Linear Algebra	1	1	-	2	2	O/L Maths
GNS 101	Use of English I	1	1	-	2	2	O/L/ English
GNS 111	Citizenship Education I	1	1	-	2	2	-
GNS 222	Principles of Economics	1	1	-	2	2	-
SDV 210	Entrepreneurship Development I	2	-	1	2	3	-
	Total	12	6	13	23	30	

YEAR OF STUDY: YEAR TWO

SEMESTER TWO

Course Code	Course Title	L	T	P	CU	CH	Pre-require
BLD 102	Building Science Properties of Materials II	1	1	0	2	2	BLD101
BLD 104	Building Construction II	2	1	0	3	3	BLD103
BLD 106	Workshop Practice and Technology II	0	-	4	2	4	BLD105
BLD 108	Introduction to Structural Mechanics	1	1	-	2	2	-
BLD 108	Principles of Accounts	1	-	2	2	3	-
BLD 110	Basic Principles of Arch Design & Drawing	1	1	-	2	2	BLD107
CEC 108	Engineering Geology & Basic Soil Mechanics	1	1	-	2	2	-
TSL 102	Basic Principles in Surveying II	1	-	3	2	4	TLS101
MTH 112	Algebra and Elementary Trigonometry	1	1	-	2	2	MTH111
GNS 102	Communication in English I	1	1	-	2	2	GNS101
GNS 121	Citizenship Education II	1	1	-	2	2	GNS111
	Total	11	8	9	23	28	

PROGRAMME: NATIONAL DIPLOMA IN BUILDING TECHNOLOGY

YEAR OF STUDY: YEAR THREE

SEMESTER THREE

Course Code	Course Title	L	T	P	CU	CH	Pre-require
BLD 202	Introduction to Theory of Structures	2	-	-	2	2	BLD108
BLD 203	Building Construction III	2	1	0	3	3	BLD104
BLD 205	Workshop Practice and Technology III	-	-	4	2	4	BLD106
BLD 207	Building Services	1	1	-	2	2	-
QUS 209	Tendering and Estimating I	1	1	-	2	2	-
QUS 102	Measurement of Building works	2	-	-	2	2	-
BLD 209	Site Management I	1	1	-	2	2	-
BLD 211	Principles of Law and Building Contracts	2	-	-	2	2	-
MTH 211	Calculus	1	1	-	2	2	MTH112
BLD 213	Technical Report Writing	1	1	-	2	2	-
ICT 101	Introduction to Computer using Packages	2	-	2	3	4	-
	Total	15	6	6	24	27	

YEAR OF STUDY: YEAR FOUR

SEMESTER FOUR

Course Code	Course Title	L	T	P	CU	CH	Pre-require
BLD 200	Introduction to Structural Design & Detailing	1	-	3	2	4	BLD201
BLD 204	Building Construction IV	2	1	-	3	3	BLD203
BLD 206	Workshop Practice & Technology IV	-	-	4	2	4	BLD205
ICT 102	Introduction to Programming using Visual Basic	2	2	2	3	4	ICT101
QUS 210	Tendering and Estimating	1	-	-	3	3	QUS209
QUS 201	Building Measurement II and Specification	2	-	2	3	4	QUS102
BLD 208	Maintenance Technology	2	-	-	2	2	-
BLD 200	Project	-	-	4	2	4	BLD213
BLD 210	Site Management II	2	-	-	2	2	BLD209
SDV 211	Entrepreneurship Development II	2	-	1	2	3	-
	Total	14	3	16	24	33	

General Studies Courses

Use of English I

Course: USE OF ENGLISH I (GRAMMAR)		Course Code: GNS 101	Contact Hours: 30Hrs Lectures
Course Specification: Theoretical Content			
General Objective 1.0: It will promote the necessary language skills which will enable student to cope effectively.			
Week	Specific Learning Outcome	Teacher Activities	Resources
1 - 3	1.1 Explain the necessity for acquiring good note-taking/making techniques 1.2 List the methods of note-taking/making 1.3 Explain the use of dictionary 1.4 Explain the use of the library 1.5 Explain the type of information sources in the library 1.6 Identify good reading habits 1.7 Explain the different methods of reading viz, scan, skim, normal and study 1.8 Use the different methods of reading explained in 1.7 above	Ask the students: the techniques of note-taking/making and list the various methods the correct ways of using the dictionary the best ways of using the library to list the various information sources in the library and how to locate these information sources the different methods of reading and the difference between the methods	Chalkboard, Duster, Recommended textbooks.
General Objective 2.0: Understand the basic roles of grammar, know the nature of the language, appreciate literary words in English			
Week	Specific Learning Outcome	Teacher Activities	Resources
4 - 6	2.1 Explain the concept of language 2.2 List the characteristics of language Explain the four language skills, viz: speaking, listening, writing, readings 2.4 Explain the functions of language 2.5 List the uses of English language in Nigeria, e.g as the language of research, government, commerce etc.	Ask the students: - the basic concept of language - to mention the characteristics of language - to identify the functions of language - to list the uses of English language in Nigeria	Chalk and Blackboard

Course: USE OF ENGLISH I (GRAMMAR)		Course Code: GNS 101	Contact Hours: 30Hrs Lectures
Course Specification: Theoretical Content			
General Objective 3.0: Understand the basic rules of grammar			
Week	Specific Learning Outcome	Teacher Activities	Resources
7 - 10	3.1 Explain grammar 3.2 Explain parts of speech 3.3 Analyse the use of parts of speech in sentences Correct common errors in the use of parts of speech in sentences 3.5 Explain how to construct sentences with correct syntactic arrangement 3.6 List punctuation marks 3.7 Enumerate the uses of punctuation marks and explain how to punctuate a given passage 3.8 Explain idioms, figures of speech and affrication	Ask the students: to explain grammar, parts of speech and how to apply them in a sentence to identify common errors in the use of parts of speech in sentences - to construct sentences with correct syntactic arrangement - to identify punctuation marks and their uses, and how to punctuate a given passage - to construct sentences to illustrate idioms, figure of speech and affixes	

Course: USE OF ENGLISH I (GRAMMAR)		Course Code: GNS 101	Contact Hours: 30Hrs Lectures
Course Specification: Theoretical Content			
General Objective 4.0: Understanding the essential qualities of paragraph			
Week	Specific Learning Outcome	Teacher Activities	Resources
11 - 13	4.1 Define a paragraph 4.2 Name the parts of a paragraph viz: topic, sentence, development and conclusion/transition 4.3 Explain the thematic qualities of a paragraph viz, unity, coherence and emphasis 4.4 Explain methods of paragraph development viz, example, definition, comparison and contrast etc 4.5 Explain methods of ordering details in a paragraph, viz, less complex to more complex and vice versa, less important to more important and vice versa, spatial, chronological etc. 4.6 Write specific paragraphs to illustrate 4.2 to 4.5 above	Ask the students: - to define a paragraph and to name the part of a paragraph - what the understand by the thematic qualities of a paragraph - to explain the various methods of paragraph development and the methods of ordering details in a paragraph Assess the students	Chalk, Blackboard and Duster
General Objective 5.0: Appreciating Literary works in English			
Week	Specific Learning Outcome	Teacher Activities	Resources
14 - 15	5.1 Give the meaning of literature 5.2 Trace the development of literature 5.3 Differentiate between the literary genres 5.4 Explain the functions of literature 5.5 Explain the terminology of prose fiction, e.g plot setting, characterization etc 5.6 Answer an essay question on a given novel	Ask the students: the meaning of literature and the development of literature the functions of literature and the terminology of Prose fiction	Chalk, blackboard, duster
ASSESSMENT: The continuous assessment, tests and quizzes will be awarded 40% of the total score. The end of the Semester Examination will make up for the remaining 60% of the total score.			

Communication Skill I

Course: COMMUNICATION SKILL I		Course Code: GNS 102	Contact Hours 30 HRS LECTURES
Course Specification: Theoretical Content			
General Objective 1.0: Acquire the necessary Communication Skills, techniques of correspondence and comprehend within materials			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1 - 4	COMMUNICATION 1.1 Define Communication 1.2 Analyse the process of Communication 1.3 Analyse the purposes of Communication 1.4 Explain the relationship between communication and language. 1.5 Explain the impact of interference on communication at various levels e.g. Phonological, syntactic, e.t.c. 1.6 Explain code-mixing, code-switching and dissonance in communication.	• Teachers are expected to involve the students in Communication Skills, and Speed intonation.	Chalk boards; Text-books, Samples of Formal and informal letters.
5 - 8	ORAL PRESENTATION 2.1 Label a diagram of the organs of speech 2.2 Describe the functions of the organs in 2.1 above in speech production. 2.3 List the phonemes of English 2.4 Produce correctly each of the phonemes listed in 2.3 above. 2.5 Pronounce correctly by making distinctions between the different sound contrasts in the consonantal and vowel systems of English. 2.6 Explain the principles of effective speaking, viz; correct use of stress, rhythm, and information patterns. 2.7 Read fluently.		

Course: COMMUNICATION SKILL I		Course Code: GNS 102	Contact Hours 30 HRS LECTURES
Course Specification: Theoretical Content			
9 – 11	<p>CORRESPONDENCE</p> <p>3.1 List the various types of correspondence, e.g. letter, memo, circular, e.t.c.</p> <p>3.2 Explain the various parts of a letter.</p> <p>3.3 Differentiate between formal and informal letter format.</p> <p>3.4 Explain the characteristics of styles suitable for formal and informal letters.</p> <p>3.5 Explain the functions of the first, middle and last paragraphs.</p> <p>3.6 Write a formal and informal letter.</p>	Give students assignments on various types of correspondence.	Chalk boards; Text-books, Samples of Formal and informal letters.
12 - 15	<p>COMPREHENSION AND INTERPRETATION</p> <p>4.1 Identify main ideas in a given passage.</p> <p>4.2 Differentiate the main ideas from the details in a passage.</p> <p>4.3 Use the main idea to anticipate specific details in a passage.</p> <p>4.4 Use context clues to aid comprehension.</p> <p>4.5 Identify relationship patterns of ideas in a passage.</p> <p>4.6 Use context clues such as definitions, restatements and examples to derive meanings.</p> <p>4.4 Interpret figurative language in a passage.</p> <p>4.5 Draw conclusions from available information.</p>	<ul style="list-style-type: none"> • Teachers should give necessary aids that will assist the comprehension of passage. 	Chalk board; Text-books, Samples of Formal and informal letters.
<p>ASSESSMENT: The continuous assessment, tests and quizzes will be awarded 40% of the total score. The end of the Semester Examination make up for the remaining 60% of the total score.</p>			

Communication Skill II

PROGRAMME: NATIONAL DIPLOMA BUILDING TECHNOLOGY			
Course: COMMUNICATION SKILL II		Course Code: GNS 202	Contact Hours 30 HRS LECTURES
Course Specification:Theoretical Content			
General Objective 1.0: Communicate clearly and effectively in both general and specific situations.			
Week	Specific Learning Outcomes:	Teacher Activities	Resources
1 - 4	REGISTERS 1.1 Explain registers. 1.2 Explain factors influencing register, viz; field (profession), mode (speech or writing), tenor (relationship between the interacting parties). 1.3 List some items of register peculiar to different professions. 1.4 Identify items of register in a given passage. 1.5 State appropriate use of jargon.	<ul style="list-style-type: none"> Teachers to emphasize on the items and importance of registers to different professions. 	Text-books, Blackboard, Chalk, Publications, samples of correspondence, Registers and reports.
5 - 7	CORRESPONDENCE 2.1 Describe different types of business letter e.g., applications, enquiries, invitations and complaints, with their replies. 2.2 Use suitable language for a specific type of letter. 2.3 Write the letter listed in 2.1 above.	<ul style="list-style-type: none"> Give exercises to students on letter writing and correspondences and assess. 	
8 - 11	WRITING FOR PUBLICATION 3.1 Explain techniques of writing for publication. 3.2 Write essays on topical and current issues. 3.3 Analyse published essay of literacy value. 3.4 Evaluate the development of ideas in a given article. 3.5 Write good articles for publication.	<ul style="list-style-type: none"> Teachers should involve the class in the analysis of published essays and texts. 	

PROGRAMME: NATIONAL DIPLOMA BUILDING TECHNOLOGY		
Course: COMMUNICATION SKILL II	Course Code: GNS 202	Contact Hours 30 HRS LECTURES
Course Specification:Theoretical Content		
12 - 15	REPORT 4.1 Define a report 4.2 List the types of report 4.3 Enumerate uses of report 4.4 List the characteristics of a good report 4.5 Outline the stage of writing a report 4.6 Evaluate a given report 4.7 Write a report.	• Give detail of report writing to students. Text-books, blackboard, Chalk, Publications, samples of correspondence, Registers and reports.
ASSESSMENT: The continuous assessment, tests and quizzes will be awarded 40% of the total score. The end of the Semester Examination will make up for the remaining 60% of the total score.		

Citizenship Education

Course: CITIZENSHIP EDUCATION		Course Code: GNS 111	Contact Hours 2HRS/WEEK
Course Specification: Theoretical Content			
General Objective: 1.0 Understand the Constitution of Nigeria			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1-4	1.1 Explain the term constitution 1.2 Distinguish the different types of constitution 1.3 Highlight some provisions of an International Constitution 1.4 Explain the effectiveness of International Constitution 1.5 Explain the supremacy of the Nigerian Constitution to other laws with emphasis on the 1989 constitution 1.6 Evaluate the main parts of the Nigeria Constitution 1.7 Draft a constitution for an association 1.8 Trace the historical development of the Nigerian Constitution 1.9 Discuss the merits and demerits of each of the Nigerian constitutions 1.10 Explain the concept of "rule of law"	Ask the students: <ul style="list-style-type: none"> • what their understand by the term constitution and to distinguish the different rules of constitution known • to explain the effectiveness of International Constitution • to explain Nigerian Constitution to other laws. • To identify the main parts of the Nigerian Constitution. Assess to the students by given the assignment to draft a constitution for an association	Chalkboard, duster

Course: CITIZENSHIP EDUCATION		Course Code: GNS 111	Contact Hours 2HRS/WEEK
Course Specification: Theoretical Content			
General Objective: 2.0 Understand the federal system of government in Nigeria			
Week	Specific Learning Outcome:	Teachers Activities	Resources
5-7	2.1 Describe a federation 2.2 Distinguish a federation from a confederation 2.3 Outline the basis for the federal system in Nigeria 2.4 Examine the evolution, structure and functions of the federal system in Nigeria. 2.5 Analyse the relationships among the three tiers of government in Nigeria 2.6 Evaluate the revenue allocation formula in operation in Nigeria 2.7 Compare and contrast other federation with Nigeria11	Ask the students: <ul style="list-style-type: none"> • to describe a federation and to differentiate between a federation and a confederation • to define the functions of the federal system in Nigeria and the relationship among the three tiers of government • to evaluate the revenue allocation formula operation in Nigeria 	<ul style="list-style-type: none"> • Chalk, blackboard, duster
General Objective: 3.0 Know the constitutional rights and obligations of Nigerian citizens			
Week	Specific Learning Outcome:	Teachers Activities	Resources
8-9	3.1 Examine the significance of rights and obligations in Nigeria 3.2 Assess government's protection of fundamental rights as contained in the Nigerian constitution 3.3 Evaluate the responsibilities and duties of Nigerian citizenships and the benefits for performing them 3.4 Assess the responsibilities and duties of constituted authority to the people 3.5 Evaluate the responsibilities and duties of government to the People	<ul style="list-style-type: none"> • Ask the students to identify the responsibilities and duties of Nigerian citizenship 	<ul style="list-style-type: none"> • Chalk, blackboard, duster

Course: CITIZENSHIP EDUCATION		Course Code: GNS 111	Contact Hours 2HRS/WEEK
Course Specification: Theoretical Content			
General Objective 3.0: Understand Citizenships			
Week	Specific Learning Outcome:	Teachers Activities	Resources
10-12	<p>4.1 Discuss the significance of citizenship</p> <p>4.2 Analyse the principles and benefits of citizenship</p> <p>4.3 Explain the difference in the modes of acquiring citizenship</p> <p>4.4 Evaluate the merits and demerits of each type of citizenship</p> <p>4.5 Analyse the basis for the acquisition and withdrawal of Nigerian citizenship</p> <p>4.5 Examine the benefits derivable from Nigeria citizenship</p>	<p>Ask the students:</p> <ul style="list-style-type: none"> • to discuss and analyse the principles and benefits of citizenship • to analyse the basis for the acquisition and withdrawal of Nigerian citizenship 	<ul style="list-style-type: none"> • Chalk, blackboard, duster
General Objective: 5.0 Fundamental objectives and directive principles of state policy in Nigeria			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	<p>5.1 State the fundamental obligations of government as provided in the constitution</p> <p>5.2 Explain the general provisions of the fundamental objectives and directive principles of state policy</p> <p>5.3 Explain the political, economic, social and education policies of Nigeria</p> <p>5.4 Explain the directive principles and policy of the Nigerian government on culture, the mass media, national ethics and duties of the citizen</p> <p>5.5 Assess the conformity observance and application of the fundamental objectives and directive principles of state policy by governments and people of Nigeria.</p> <p>5.6 Recommend improvements on the provision conformity, observance and application of the fundamental objectives and directive principles of state policy</p>	<ul style="list-style-type: none"> • Ask the students to explain the directive principles and policy of the Nigerian • Government on cultures, the mass media, national ethnics and duties of the citizen 	<ul style="list-style-type: none"> • Chalk, blackboard, duster

Mathematics Courses

Algebra and Elementary Trigonometry (MTH 112)

General Objectives

On completion of this course the student will be able to:

1. Understand the laws of indices and their application in simplifying algebraic expressions.
2. Understand the theory of logarithms and surds and their applications in manipulating expressions.
3. Understand principles underlying the construction of charts and graphs.
4. Know the different methods of solving quadratic equations.
5. Understand permutation and combination
6. Understand the concept of set theory
7. Understand the properties of arithmetic and geometric progressions
8. Understand the binomial theorem and its application in the expansion of expressions and in approximations.
9. Understand the basic concepts and manipulation of vectors and their applications to the solution of engineering problems.
10. Understand the concept of equations and methods of solving different types of equations and apply same to engineering problems.
11. Understand the definition, manipulation and application of trigonometric functions.

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY		COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
Course Specification: Theoretical Content			
General Objective 1.0: Understand laws of indices and their applications in simplifying algebra expressions			
Week	Specific Learning Outcomes	Teacher Activities	Resources
1	1.1 Define index 1.2 Establish the laws of indices 1.3 Solve simple problems using the laws of indices.		• Chalkboard, Textbooks, Calculators.
General Objective 2.0: Understand Theory of logarithms surds and their applications in manipulating expression			
Week	Specific Learning Outcomes	Teacher Activities	Resources
2 - 3	2.1 Define logarithm 2.2 Establish the four basic laws of logarithm 2.3 Solve simple logarithm problem 2.4 Define natural logarithm and common logarithm. 2.5 Define characteristic and mantissa 2.6 Read the logarithmic table for given numbers 2.7 Simplify numerical expressions using log tables e.g. e.g. $18 D = 3\%4JPC^2 \wedge M^B$. find D when J = 0935, e.g. $\theta = 35, P = 1.6$ $10^6, C = 55, M = 0.0025. \pi = 3.142$ 2.8 Apply logarithm in solving non-linear equations. e.g. $y = ax^n; \log y = \log a + n \log x; y = bc^x = \log y = \log b + x \log c;$ $Y = a + bx^n \text{ B } \log (Y B D) = \log b + n \log x.$ 2.9 Define surds 2.10 Reduce a surd into its simplest form 2.11 Solve simple problems on surds	• Ask the students to solve logarithmic and surd related problems	- do -

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY		COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
Course Specification: Theoretical Content			
General Objective 3.0: Understand Principles underlying the construction of Charts and graphs			
Week	Specific Learning Outcomes	Teacher Activities	Resources
4	3.1 Construct graphs of functions fractions such as $Y = ax + b, n = 1, 2$ $Y = CST (a+x)$ $Y = ax^k$, including cases of asymbles 3.2 Apply knowledge from 3.1 in determination as laws from experimental data.	• Ask the students to draw graphs	-do-
General Objective 4.0: Know the different methods of solving quadratic equations			
Week	Specific Learning Outcomes	Teacher Activities	Resources
5	4.1 Solve quadratic equations by factorization 4.2 Solve quadratic equations by method of completing squares. 4.3 Solve quadratic equations by formula 4.4 Discriminate the roots. 4.5 Form equations whose roots are given in different methods.	• Ask the students to solve quadratic equations	-do-
General Objective 5.0: Understand Permutations and Combinations			
Week	Specific Learning Outcomes	Teacher Activities	Resources
6	5.1 Define permutation 5.2 State examples of permutations 5.3 Define combination 5.4 State examples of combination 5.5 Establish the theorem $nPr = n!/[(n-r)!]$ giving examples e.g. number of ways of collecting two out of 8 balls	• Give exercises on permutation and combination to them	-do-
General Objective 6.0: Understand the concept of set theory			
Week	Specific Learning Outcomes	Teacher Activities	Resources
7	6.1 Establish ${}^nC_r = {}^nC_n B r.$ 6.2 Define sets, subsets, and null sets 6.3 Define union, inter-section and completion of sets 6.4 Draw Venn diagrams to demonstrate the concepts in 6.1 B 6.3 above. 6.5 Calculate the size or number of elements in a given set.	-do-	-do-

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY		COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
Course Specification: Theoretical Content			
General Objectives 7.0: Understand the properties of arithmetic and geometric progressions			
Week	Specific Learning Outcomes	Teacher Activities	Resources
8 - 9	<p>7.1 Define an Arithmetic progression (A.P.)</p> <p>7.2 Obtain the formula for nth term and the first n terms of an A.P.</p> <p>7.3 Give examples of the above e.g. find the 20th term of the series e.g. 2 + 4 + 6 + Y.. Find also the series of the first 20 terms.</p> <p>7.4 Define a geometric progression (G.P.)</p> <p>7.5 Obtain the formula for the nth term and the first n terms of a geometric series.</p> <p>7.6 State examples of 7.5 above e.g. given the sequences 1/3, 1,3 Y find the 20th term and hence the sum of the 1st 2o terms.</p> <p>7.7 Define Arithmetic Mean (AM) and Geometric Mean (G.M.)</p> <p>7.8 Define convergency of series.</p> <p>7.9 Define divergence of series.</p>	<ul style="list-style-type: none"> Ask the students to apply progression to solve problems 	-do-
General Objectives 8.0: Understand the binomial theorem and it's application in the expansion of expressions and in approximations.			
Week	Specific Learning Outcomes	Teacher Activities	Resources
10	<p>8.1 Explain the method of mathematical induction</p> <p>8.2 State and prove the binomial theorem for a positive integral index.</p> <p>8.3 Expand expressions of the forms $(x + y)^2$, $(x^2 B 1)^s$ applying binominal theorem</p> <p>8.4 Find the coefficient of a particular term in the expansion of simple binomial expressions.</p> <p>8.5 Find the middle term in the expansion of binomial expression</p> <p>8.6 State the binomial theorem for a rational index.</p>	<ul style="list-style-type: none"> State the importance and application of the theorem 	-do-

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY	COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objectives 8.0: Understand the binomial theorem and it's application in the expansion of expressions and in approximations.

Week	Specific Learning Outcomes	Teacher Activities	Resources
10	8.1 Explain the method of mathematical induction 8.2 State and prove the binomial theorem for a positive integral index. 8.3 Expand expressions of the forms $(x + y)^2$, $(x^2 + 1)^s$ applying binomial theorem 8.4 Find the coefficient of a particular term in the expansion of simple binomial expressions. 8.5 Find the middle term in the expansion of binomial expression 8.6 State the binomial theorem for a rational index. 8.7 Expand expressions of the form: $(1 + x)^{-1}$, $(1 + x)^{-2}$, $(1 + x)^{-a}$ applying binomial theorem 8.8 Expand and approximate expressions of the type $(1.001)^n$, $(0.998)^n$, $(1 + x)^{-2}$, $(1 + x)^a$ to a stated degree of accuracy applying scalar expressions.	<ul style="list-style-type: none"> State the importance and application of the theorem 	-do-
11	9.1 State the definitions and representations of vectors. 9.2 Define a position vector. 9.3 Define unit vector 9.4 Explain scalar multiple of a vector 9.5 List the characteristics of parallel vectors 9.6 Identify quantities that may be classified as vector e.g. displacement velocity, acceleration, force etc. 9.7 Compute the modulus of any given vector up to 2 and 3 dimensions. 9.8 State the parallelogram law in solving problems including addition and subtraction of vectors	<ul style="list-style-type: none"> Apply the techniques of vectors to solve various problems 	-do-

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY		COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
Course Specification: Theoretical Content			
General Objectives 8.0: Understand the binomial theorem and it's application in the expansion of expressions and in approximations.			
Week	Specific Learning Outcomes	Teacher Activities	Resources
11	9.9 Apply the parallelogram law in solving problems including addition and subtraction of vectors. 9.10 Explain the concept of components of a vector and the meaning of orthogonal components. 9.11 Resolve a vector into its orthogonal components. 9.12 List characteristics of coplanar localized vectors. 9.13 Define the resultant or composition of coplanar vectors.	<ul style="list-style-type: none"> Apply the techniques of vectors to solve various problems 	-do-
General Objectives 9.0: Understand the basic concepts and manipulation of vectors and their applications to the solutions of engineering problems			
Week	Specific Learning Outcomes	Teacher Activities	Resources
12	9.14 Compute the resultant of coplanar forces acting at a point using algebraic and graphical methods. 9.15 Apply the techniques of resolution and resultant to the solution of problems involving coplanar forces. 9.16 Apply vectoral techniques in solving problems involving relative velocity. 9.17 State the scalar product of two vectors. 9.18 Compute the scalar product of given vectors. 9.19 Define the cross product of the vector product or two vectors. 9.20 Calculate the direction ratios of given vectors. 9.21 Calculate the angle between two vectors using the scalar product.	<ul style="list-style-type: none"> Apply the techniques of vector to solve various problems 	-do-

COURSE: ALGEBRA AND ELEMENTARY TRIGONOMETRY	COURSE CODE: MTH 112	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objectives 10.0: Understand the Concept of equations and apply same to engineering problems

Week	Specific Learning Outcomes	Teacher Activities	Resources
13 - 14	<p>10.1 Explain the concept of equation, ie. $A = B$ where A and B are expressions.</p> <p>10.2 List different types of equations:- Linear, quadratic, cubic, etc.</p> <p>10.3 State examples of linear simultaneous equations with two unknowns and simultaneous equations with at least one quadratic equation.</p> <p>10.4 Apply algebraic and graphical methods in solving two simultaneous equations involving a linear equation and a quadratic equation.</p> <p>10.5 Apply the algebraic and graphical methods in solving two simultaneous quadratic equations.</p> <p>10.6 Define a determinant of n^{th} order.</p> <p>10.7 Apply determinants of order 2 and 3 in solving simultaneous linear equations.</p>	<ul style="list-style-type: none"> Ask the student to solve various equations as indicated in section 10 	-do-

General Objectives 11.0: Understand the definition, manipulation and application of trigonometric functions

Week	Specific Learning Outcomes	Teacher Activities	Resources
15	<p>11.1 Define the basic trigonometric ratios, sine, cosine and tangent of an angle.</p> <p>11.2 Derive the other trigonometric ratios; cosecant, secant and cotangent using the basic trigonometric ratios in 11.1 above.</p> <p>11.3 Derive identities involving the trigonometric ratios of the form; $\text{Cos}^2\theta + \text{Sin}^2\theta = 1$, $\text{Sec}^2\theta = 1 + \text{tan}^2\theta$, etc.</p> <p>11.4 Derive the compound angle formulae for $\sin(A+B)$, $\text{Cos}(A+B)$ and $\text{Tan}(A+B)$.</p>	<ul style="list-style-type: none"> Define and Derive the trigonometric ratios and identities 	-do-

ASSESSMENT: The continuous assessment, tests and quizzes will be awarded 40% of the total score. The end of the Semester Examination will make up for the remaining 60% of the total score.

Calculus (MTH 211)

General Objectives

On completion of this course the student will be able to:

1. Understand the basic concepts of differential calculus and its application in solving engineering problems.
2. Know integration as the reverse of differentiation and its application to engineering problems.
3. Understand first order homogenous linear ordinary differential equation's with constant coefficients as applied to simple circuits.
4. Understand the basic concepts of partial differentiation and apply same to engineering problems.

COURSE: CALCULUS		Course Code: MTH 211	Contact Hours 3/0/0
Course Specification: Theoretical Content			
General Objective: 1.0 Understand the basic concepts of differential Calculus and in application in solving engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 4	1.1 Define limits with examples 1.2 State and prove basic theorems on limits 1.3 Prove that $\lim \sin \theta/\theta$, $\lim \tan \theta/\theta = 1$ as $\theta \rightarrow 0$ 1.4 Define differentiation as an incremental notation or a function. 1.5 Differentiate a function from first principles. 1.6 Prove the formulae for derivative of functions, Function of a function, products, and quotient of functions. 1.7 Differentiate simple algebraic, trigonometric, logarithmic, exponential, hyperbolic parametric, inverse and implicit functions. 1.8 Derive second derivative of a function. 1.9 Apply differentiation to simple engineering and technological problems. 1.10 Explain the rate of change of a function 1.11 Explain the condition for turning point of a function. 1.12 Distinguish between maximum and minimum value of a function. 1.13 Sketch the graph of a function showing its maximum and minimum points and points of inflexion.	<ul style="list-style-type: none"> • Teachers are to give and solve simple engineering and technological problems 	Chalkboard, textbooks, lecture notes, chalk

COURSE: CALCULUS		Course Code: MTH 211	Contact Hours 3/0/0
Course Specification: Theoretical Content			
General Objective: 1.0 Understand the basic concepts of differential Calculus and in application in solving engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 4	1.14 Estimate error quantities from the small increment of a function. 1.15 Determine the tangent to a curve. 1.16 Determine the normal to a curve.	• Teachers are to give and solve simple engineering and technological problems	Chalkboard, textbooks, lecture notes, chalk
General Objective 2.0: Know integration as the reverse of differentiation and its application to engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
5 - 8	2.1 Define integration as the reverse of differentiation. 2.2 Explain integration as a limit of summation of a function. 2.3 Distinguish between indefinite and definite integrals. 2.4 Determine the indefinite and definite integrals. 2.5 Determine the definite integral of a function. 2.6 Integrate algebraic, logarithmic, trigonometric and exponential simple functions. 2.7 List possible methods of integration. 2.8 Integrate algebraic and trigonometric functions by the substitution method 2.9 Integrate trigonometric and exponential functions by parts 2.10 Integrate algebraic functions by partial fraction. 2.11 Integrate trigonometric and logarithmic functions applying reduction formula. 2.12 State standard forms of some basic integrals. 2.13 Calculate length of arc, area under a curve, area between two curves, volume of revolution, center of gravity, center of surface area, second moment and moment of inertia.	Ask students to apply integral calculus to simple function	-do-

COURSE: CALCULUS		Course Code: MTH 211	Contact Hours 3/0/0
Course Specification: Theoretical Content			
General Objective 2.0: Know integration as the reverse of differentiation and its application to engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
5 - 8	<p>2.14 Define Trapezoidal and Simpson's rule as methods of approximating areas under given curves.</p> <p>2.15 Find approximate area under a curve applying Trapezoidal method.</p> <p>2.16 Find approximate area under a curve applying Simpson's rule.</p> <p>2.17 Compare result obtained from Trapezoidal and Simpson's rules with the results by direct integration.</p> <p>2.18 Apply integration to kinematics.</p>	Ask students to apply integral calculus to simple function	-do-
General Objective 3.0: Understand first order homogenous linear ordinary equations with constant coefficients as applied to simple engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
9 - 12	<p>3.1 Define first order differential equation</p> <p>3.2 List order, degree, general solution, boundary or initial conditions and particular solution of differential equations.</p> <p>3.3 List examples of various types of first order differential equations.</p> <p>3.4 Define first order homogenous differential equations</p> <p>3.5 List the methods of solving differential equations by separable variables.</p> <p>3.6 Identify differential equations reducible to the homogenous form.</p> <p>3.7 Explain exact differential equations.</p> <p>3.8 Solve exact differential equations, e.g. Show that $(3x^2 + y \cos x) dx + (\sin x - 4y^3) dy = 0$ is an exact differential equation; Find its general solution.</p> <p>3.9 Define integrating factors.</p>	Ask students to apply differential equation to solve engineering problems	-do-

COURSE: CALCULUS		Course Code: MTH 211	Contact Hours 3/0/0
Course Specification: Theoretical Content			
General Objective 3.0: Understand first order homogenous linear ordinary equations with constant coefficients as applied to simple engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
9 - 12	3.10 Determine the solution of differential equations using integrating factors. 3.11 Define linear differential equations of the first order.	Ask students to apply differential equation to solve engineering problems	-do-
General Objective 4.0: Understand the basic concepts of partial differentiation and apply same to engineering problems			
Week	Specific Learning Outcome	Teachers Activities	Resources
13 - 15	4.1 Define partial differentiation 4.2 List and explain the uses of partial derivatives. 4.3 Solve problems on partial differentiation. e.g. $f(x, y) = x^2 + y^2 = 2xy$, find dy/dx , dx/dy 4.4 Apply partial differentiation to engineering problems.	• Solve problems on partial differential	-do-
Assessment: The continuous assessment, test and quizzes will be awarded 40% of the total score. The end of the semester Examination will make up for the remaining 60% of the score			

Logic and Linear Algebra MTH 202

General Objectives

On completion of this course the student will be able to:

1. Understand the basic rules of mathematical logic and their application to mathematical proofs.
2. Know permutations and combinations
3. Compute the binomial expansion of algebraic expansions.
4. Understand the algebraic operations of matrices and determinants as well as solve simultaneous linear equations by the methods of matrices.

COURSE: LOGIC AND LINEAR ALGEBRA	COURSE CODE: MTH 202	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objective 1.0: On completion of this course, the students should be able to:

Week	Specific Learning Outcome:	Teachers Activities	Resources
1 - 2	<p>1.1 The essential connectives, negation, conjunction, disjunction, implication and bi-implication</p> <p>1.2 State the essential connectives defined in 1.1 above.</p> <p>1.3 Explain grouping and parenthesis in logic,</p> <p>1.4 Explain Truth Tables.</p> <p>1.5 Define tautology</p> <p>1.6 Give examples of types of tautology. e.g</p> <p style="padding-left: 40px;">If P and Q are distinct atomic sentences, which of the following are tautologies?</p> <p style="padding-left: 40px;">P B Q (b) PUQ B QUP (c) PV(P*Q)</p> <p style="padding-left: 40px;">Let P = Jane Austen was a contemporary of Beethoven.</p> <p style="padding-left: 40px;">Q = Beethoven was a contemporary of Gauss.</p> <p style="padding-left: 40px;">R = Gauss was a contemporary of Napoleon</p> <p style="padding-left: 40px;">S = >Napoleon was a contemporary of Julius Caesar =.</p> <p style="padding-left: 40px;">(Thus P, Q and R and true, and S is false).</p> <p style="padding-left: 40px;">Then find the truth values of sentences:-</p> <p style="padding-left: 40px;">(a) (P *Q) = R</p> <p style="padding-left: 40px;">(b) (P B Q)</p> <p style="padding-left: 40px;">(c) P *Q B R B S</p>	<ul style="list-style-type: none"> • Explain and illustrate 1.1 to 1.6 and ask the students to find the truth value of the logic statement • Assess the student 	<ul style="list-style-type: none"> • Lecture notes, Recommended textbooks, charts, chalkboard

COURSE: LOGIC AND LINEAR ALGEBRA	COURSE CODE: MTH 202	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objective 1.0: On completion of this course, the students should be able to:

Week	Specific Learning Outcome:	Teachers Activities	Resources
3 – 4	<p>1.7 Define universal quantifier and existential quantifier.</p> <p>1.8 Translate sentences into symbolic form using quantifiers.</p> <p style="padding-left: 40px;">e.g. >some freshmen are intelligent = can be stated as for some x, x, is a freshman and x is intelligent = can translate in symbols as $(\exists x) (Fx \& Ix)$.</p> <p>1.9 Define the scope of a quantifier</p> <p>1.10 Define >bound = and >free = variables</p> <p>1.11 Define >term = and formula =</p> <p>1.12 Give simple examples of each of 1.9 to 1.11 above.</p> <p>1.13 Explain the validity of formulae</p>	<ul style="list-style-type: none"> • Explain and illustrate 1.7 to 1.2 and asked the students to solve problems on 1.7 to 1.11 	<ul style="list-style-type: none"> • Recommended textbooks, lecture notes, chalkboard, chalk

General Objective 2.0: Know permutation and combination

Week	Specific Learning Outcome:	Teachers Activities	Resources
5 - 7	<p>2.1 Define permutations and combinations</p> <p>2.2 Give illustrative examples of each of 2.1 above</p> <p>2.3 State and approve the fundamental principle of permutation.</p> <p>2.4 Give illustrative examples of the fundamental principles of permutation.</p>	<ul style="list-style-type: none"> • Explain and illustrate the activities in 2.1 to 2.15 and ask the student to: <ul style="list-style-type: none"> • establish the formula $nPr = \frac{n!}{(n-r)!}$ • Prove that $nPr = (n-r+1)(nPr-1)$ • Establish the formula $nCr = \frac{n!}{r!(n-r)!}$ • Prove that ${}^nC_r = nC_{n-r}$ 	<ul style="list-style-type: none"> • Recommended textbooks, lecture notes, chalkboard, chalk

COURSE: LOGIC AND LINEAR ALGEBRA	COURSE CODE: MTH 202	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objective 2.0: Know permutation and combination

Week	Specific Learning Outcome:	Teachers Activities	Resources
5 – 7	2.5 Establish the formula ${}^n P_r = n! / (n - r)!$ 2.6 Prove that ${}^n P_r = (n - r + 1) \times {}^n P_{(r - 1)}$. 2.7 Solve problems of permutations with restrictions on some of the objects. 2.8 Solve problems of permutations in which the objects may be repeated. 2.9 Describe circular permutations. 2.10 Solve problems of permutation of N things not all different. 2.11 Establish the formula ${}^n C_r = n! / [(n - r)! r!]$ 2.12 Solve example 2.11 2.13 State and prove the theorem ${}^n C_r = {}^n C_{n-r}$. 2.14 Solve problems of combinations with restrictions on some of the objects. 2.15 Solve problems of combinations of n different things taken any number at a time.	<ul style="list-style-type: none"> • Explain and illustrate the activities in 2.1 to 2.15 and ask the student to: <ul style="list-style-type: none"> • establish the formula ${}^n P_r = n! / (n - r)!$ • Prove that ${}^n P_r = (n - r + 1)({}^n P_{(r - 1)})$ • Establish the formula ${}^n C_r = n! / [(n - r)! r!]$ • Prove that ${}^n C_r = {}^n C_{n-r}$ 	<ul style="list-style-type: none"> • Recommended textbooks, lecture notes, chalkboard, chalk

General Objective 3.0: Know binomial theorem

Week	Specific Learning Outcome:	Teachers Activities	Resources
8 - 10	3.1 Explain with illustrative examples B the method of mathematical induction. 3.2 State and prove binomial theorem for positive integral index. 3.3 Explain the properties of binomial expansion.	<ul style="list-style-type: none"> • Explain and illustrate activities in 3.1 to 3.7 and ask the students to solve them 	<ul style="list-style-type: none"> • Recommended textbooks, lecture notes, chalkboard, chalk, etc

COURSE: LOGIC AND LINEAR ALGEBRA	COURSE CODE: MTH 202	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objective 3.0: Know binomial theorem

Week	Specific Learning Outcome:	Teachers Activities	Resources
8 - 10	<p>3.4 State at least seven (7) examples of 3.3 above.</p> <p>e.g.i. A $(x^2 - 1/x)$</p> <p>ii. Find the constant term in the expansion of $(x + 1/x)^A$</p> <p>iii. Find the co-efficient of xv in the expansion of $(x + k)^A$ where v is a number lying between Bn and n-</p> <p>3.5 State the binomial theorem for a rational number</p> <p>3.6 State the properties of binomial coefficients.</p> <p>3.7 Apply binomial expansion in approximations (simple examples only).</p>	<p>• Explain and illustrate activities in 3.1 to 3.7 and ask the students to solve them</p>	<p>• Recommended textbooks, lecture notes, chalkboard, chalk, etc</p>

General Objective 4.0: Know matrices and determinants

Week	Specific Learning Outcome:	Teachers Activities	Resources
11 - 15	<p>4.1 Define Matrix</p> <p>4.2 Define the special matrices B zero matrix, identify matrix B square matrix, triangular matrix, symmetric matrix, skero symmetric matrix.</p> <p>4.3 State example for each of the matrices in 4-2 above.</p> <p>4.4 State the laws of addition and multiplication of matrices.</p> <p>4.5 Illustrate the commutative, associative, and distributive nature of the laws states in 4.4 above.</p> <p>4.6 Explain the transpose of a matrix.</p> <p>4.7 Determine a determinant for $2by^2$ and $3by^2$ matrices.</p>	<p>• Explain and illustrate the activities in 4.1 to 4.19. Ask the student to prove the theorems and solve problems on the illustrated activities. Assess the student</p>	<p>• Recommended textbooks, lecture notes, chalkboard, chalk, etc</p>

COURSE: LOGIC AND LINEAR ALGEBRA	COURSE CODE: MTH 202	CONTACT HOURS: 15 HRS LECTURE 15 HRS TUTORIAL
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Course Specification: Theoretical Content

General Objective 4.0: Know matrices and determinants

Week	Specific Learning Outcome:	Teachers Activities	Resources
11 - 15	<p>4.8 Define the minors and cofactors of a determinant.</p> <p>4.9 Explain the method of evaluating determinants.</p> <p>4.10 State and prove the theorem A Two rows or two columns of a matrix are identical, then the value of it's determinant is zero.</p> <p>4.11 State and prove the theorem A If two rows or two columns of a matrix are interchanged, the sign of the value of its determinant is changed.</p> <p>4.12 State and prove the theorem. A If any one row or one column of a matrix is multiplied by a constant, the determinant itself is multiplied by the constant.</p> <p>4.13 State and prove the theorem A If a constant times the elements of a row or a column are added to the corresponding elements of any other row or column, the value of the determinant itself is multiplied by the constant.</p> <p>4.14 State five examples of each of the theorems in 4. 10-4 13 above.</p> <p>4.15 Define the adjoint of a matrix</p> <p>4.16 Explain the inverse of a matrix.</p> <p>4.17 State the linear transformations on the rows and columns of a matrix.</p> <p>4.18 Apply Cramer's rule in solving simultaneous linear equation.</p> <p>4.19 Apply Linear transformation in solving simultaneous linear equations.</p>	<p>• Explain and illustrate the activities in 4.1 to 4.19. Ask the student to prove the theorems and solve problems on the illustrated activities. Assess the student</p>	<p>• Recommended textbooks, lecture notes, chalkboard, chalk, etc</p>

Assessment: The continuous assessment, tests and quizzes will be awarded 40% of the total score. The end of the Semester Examination will make up for the remaining 60% of the total score

Building Courses

Building Science & Properties of Materials I

COURSE: Building Science & Properties of Materials 1		Course Code: BLD 101	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 1.0: Understanding Dynamics Using Newton's Laws of Motion			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1	1.1 Appreciate the effect of heat 1.2 Explain thermal conductivity 1.3 Describe the principles of heat transmission 1.4 Calculate heat transmission coefficient	<ul style="list-style-type: none"> • With the aid of question and answer discuss thermal conductivity and heat transmission • Use relevant formula to determine heat transmission coefficient. 	<ul style="list-style-type: none"> • Chalkboard
General Objective 2.0: Understand the basic principles of sound insulation and Acoustics			
Week	Specific Learning Outcome	Teacher's Activities	Resources
2	2.1 Explain the principle of sound transmission 2.2 Illustrate the characteristics of sound e.g. frequency, Pitch, reflection, intensity etc.	<ul style="list-style-type: none"> • Discuss the principles of so sound transmission using questions and answers. • Use a tuning fork to explain the • Characteristics of sound. 	<ul style="list-style-type: none"> • Chalkboard and • Tuning Fork
General Objective 3.0: Derive Sabine formula			
Week	Specific Learning Outcome	Teacher's Activities	Resources
3 - 4	3.1 Explain the characteristics of light e.g. frequency, wave-length, spectrum. 3.2 Illustrate the principles of illumination.	<ul style="list-style-type: none"> • Use mathematical equations to formulate • Sabine's formula • Use a Prism to discuss spectrum and the other characteristics. • Discuss the lighting of a space naturally and artificially. 	<ul style="list-style-type: none"> • Chalkboard and • Prism
General Objective 4.0: Understand the Properties and different species of timber			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5 - 6	4.1 Explain the different type of plywood and particle boards. 4.2 Illustrate the defects in timbere.g Knot.	<ul style="list-style-type: none"> • State/list the properties of soft wood and hardwood. • Present samples of timber defects, plywood and particle boards. 	

COURSE: Building Science & Properties of Materials 1		Course Code: BLD 101	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 5.0: Understand the composition and properties of ferrous and non-ferrous Metals.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
7	5.1 Explain the properties and uses of ferrous and non-ferrous metals.	• Perform the tensile and hardness test for ferrous and non-ferrous metals.	
General Objective 6.0: Understand the composition and properties of paints and varnishes			
Week	Specific Learning Outcome	Teacher's Activities	Resources
8	6.1 State the composition of paints and varnishes. 6.2 Describe the characteristics.	• Illustrate the defects in paints. • Present samples of paints.	
General Objective 7.0: Understand the characteristics of glass			
Week	Specific Learning Outcome	Teacher's Activities	Resources
9	7.1 Enumerate the various types of glass and their function in building construction. 7.2 Describe the manufacturing process of glass.	• Present sample of glass.	
General Objective 8.0: Know the derivation properties and uses of asphalt and bitumen.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
10 & 11	8.1 Describe the derivation process for asphalt and Bitumen. 8.2 State the properties of asphalt and bitumen e.g. melting Pt, viscosity etc. 8.3 Explain the uses of asphalt and Bitumen in building construction.	• Show to the students' samples of asphalt and Bitumen.	
General Objective 9.0: Understand the chemical composition and uses of adhesives			
Week	Specific Learning Outcome	Teacher's Activities	Resources
12	9.1 List the properties of adhesives. 9.2 Explain the use of adhesives.	• Present samples of adhesives.	

COURSE: Building Science & Properties of Materials 1		Course Code: BLD 101	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 10.0: Understand the manufacture and uses of asbestos and asbestos products			
Week	Specific Learning Outcome	Teacher's Activities	Resources
13	10.1 Describe the manufacturing processes of asbestos. 10.2 List the properties of asbestos 10.3 Explain the uses of asbestos products in building construction.	• Present samples of asbestos products e.g. roofing sheets, ceiling boards etc.	
General Objective 11.0: Understand the causes, effects and prevention of corrosion and fungal attacks in building.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
15	11.1 Describe the different types of corrosion and their prevention.	• Illustrate the methods of prevention against termites and fungal attacks in buildings.	Chalkboard.
<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should understand the properties of construction materials.</p> <p>References:</p> <ol style="list-style-type: none"> 1. F. Hall "Essential Building Services and Equipment" 2. Christopher A. Hrward "An Introduction to Building Services" 			

Building Science & Properties of Materials II

COURSE: Building Science & Properties of Materials II		Course Code: BLD 102	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 1.0: Understanding Dynamics Using Newton's Laws of Motion			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1	1.1 Explain Newton's Law of Motion and their application. 1.2 Differentiate between impulse and momentum.	<ul style="list-style-type: none"> • Discuss Law of motion, impulse and Momentum through the use of question and answer. • Demonstrate the application of this Law by using an object at "rest", and an object in motion. • Give examples of their application e.g Walking, running, paddling canoe etc. 	• Chalk Board
2	1.3 Define Kinetic Energy. 1.4 Identify Kinematics of points. Analyse the composition and resolution of locities and Acceleration.	<ul style="list-style-type: none"> • Use question and answer to explain Kinetic energy • Use question and answer to identify These points. • Discuss velocity, acceleration using Practical examples e.g. an automobile starting from "rest" to attain a certain level of motion. 	• Chalk Board
3	1.6 Differentiate relative velocity and acceleration.	• Discuss these two terms by the use of vectors.	
General Objective 2.0: Know macroscopic properties of solids and their relation to structure.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
4	2.1 Differentiate conductor and semi-conductor. 2.2 Describe d-electric, plazo-electric and magnetic properties of solids.	<ul style="list-style-type: none"> • With the aid of question and answer, explain a conductor and a 'semi-conductor' • Show to the students' examples of conductors like metals water etc. • Demonstrate to the students the dielectric, Plaxo-electric and magnetic properties of e.g. Granite. 	• Chalkboard

COURSE: Building Science & Properties of Materials II		Course Code: BLD 102	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 3.0: Know some basic building construction materials e.g. stone			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5	3.1 Classify good building stones and their characteristics.	<ul style="list-style-type: none"> List some basic building materials like stone, Sand etc. 	<ul style="list-style-type: none"> Chalkboard
6	3.2 Describe quarrying and dress stones.	<ul style="list-style-type: none"> Show the students samples e.g. Granite. 	<ul style="list-style-type: none"> Chalkboard
7	3.3 Describe the uses of stones.	<ul style="list-style-type: none"> If possible, take students to nearby quarrying Pits. 	<ul style="list-style-type: none"> Chalkboard
8	3.4 Identify types of clay products, describing their Manufacturing process.	<ul style="list-style-type: none"> Show them various sizes of stones. Show the students clay products like roofing tiles, Floor tiles, bricks etc. 	<ul style="list-style-type: none"> Chalkboard
9	3.5 Conduct tests on bricks listing their characteristics. 3.6 Describe composition and uses of lime and mortars.	<ul style="list-style-type: none"> Explain how these products are produced. Demonstrate to the students how these tests can be conducted. Explain to the students the constituents of Calcium carbonate and water. Show the students sample of lime Explain to the students that lime is a binding agent. Explain constituents of mortar-fine Aggregates and cement or lime 5.0 Explain mortar as a binder too. 	<ul style="list-style-type: none"> Chalkboard
10	3.7 Identify different types of cement describing their manufacturing processes and uses. 3.8 Describe standard tests for finess, setting time and precautions in storage of cement. 3.9 Identify materials used in cement concrete and lime concrete.	<ul style="list-style-type: none"> List all types of cements e.g. O.P.C, Rapid hardening, Extra rapid hardening, Sulphate resisting cement etc. Describe wet and dry manufacturing processes using schematic diagrams. Explain the use of each type of cement. 	<ul style="list-style-type: none"> Chalkboard

COURSE: Building Science & Properties of Materials II		Course Code: BLD 102	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
11		<ul style="list-style-type: none"> • Describe the standard test for fine-ness setting time of cement using Vicat's apparatus. • Explain how cement is stored. • List materials like cement, sand, stones, (fine and coarse aggregates) and water for cement concrete and lime, sand/stone and water for lime concrete in pre-determined proportions. 	• Laboratory Chalk Board
12	3.10 Compare types of concrete such as light weight concrete and non-fine concrete.	<ul style="list-style-type: none"> • Explain lightweight concrete and non-fine Concrete. • Produce samples of each type for better appreciation. • Identify the "Pros" and "Cons" of each type. • Demonstrate batching by volume and by weight. • Explain the term: water/cement ratio and its important role in the workability of a mix. • Conduct sieve analysis test. 	• Chalkboard
13	3.11 Carry out workability slump test, field tests for concrete strength and impurities in fine aggregates.	<ul style="list-style-type: none"> • Conduct slump test in order to determine • Workability of a concrete mix. • Demonstrate to the students how Schmidt • Hammer is used to determine strength of • Concrete on site. • Carry out percentage silt-content test of fine aggregates. 	• Chalkboard
14	3.11 Describe curing of concrete vibration of concrete and water proofing concrete.	<ul style="list-style-type: none"> • Explain to the students the term: • Curing of concrete by the use of question of question and answer. • Explain vibration of concrete and its importance. • Demonstrate vibration of concrete. • Explain well graded concrete concrete as water proofing concrete. 	• Chalkboard

COURSE: Building Science & Properties of Materials II		Course Code: BLD 102	Contact Hours: 1-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 4.0: Ferrous And Non-Ferrous Metals			
Week	Specific Learning Outcome	Teacher's Activities	Resources
15	4.1 Compare Pig Iron, Wrought Iron and steel. 4.2 Describe manufacturing of types of Iron and steel mentioned in 4.1.	<ul style="list-style-type: none"> • Explain the various types of Iron and steel. • Provide samples of these Irons and steel. • Explain manufacturing processes and uses of these Iron. 	<ul style="list-style-type: none"> • Chalkboard
<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should understand the dynamics and be familiar with properties of construction materials</p> <p>References:</p> <ol style="list-style-type: none"> 1. Euiot, J. "Building Science and materials". 2. Maxwell-cook, J. C. "structural woles and Details Sought: cement and concrete". 			

Building Construction I

COURSE: Building Construction 1		Course Code: BLD 103	Contact Hours: 2-0-3
COURSE SPECIFICATION: Theoretical Content			
General Object: Know the various building components and their functional requirements			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1	1.1 Explain the term building components. 1.2 Enumerate the building components e.g foundation, floor, wall, ceiling, roof, fenestrations, doors, windows, etc. 1.3 Identify the different requirements of building components. 1.4 Sketch these various building components.	<ul style="list-style-type: none"> • Use the existing classroom to show the students the various building Components. • Use question and answer to discuss the different requirements of building components. • Make students to carry out good sketches. 	<ul style="list-style-type: none"> • Chalk board • Drawing Studio & Projector
General Objective 2.0: Understand the preliminaries involved in the Construction of a building			
Week	Specific Learning Outcome	Teacher's Activities	Resources
2	2.1 List the site activities which proceed the actual building construction. 2.2 Explain the importance for the provision of the following facilities on site: temporary services, roads, materials storage accommodation, Site sheets and offices.	<ul style="list-style-type: none"> • Use question and answer to discuss preliminary site activities. • Involve the students in explaining the importance of the preliminary site activities. • Demonstrate with appropriate sketches to explain the need for good site organisation and layout 	Chalk Board, Measuring tape, Builders square, theodolite, pegs.
3 4	2.3 Analyse factors to be considered in site organization and layout. 2.4 Describe the process of setting out a building using the following: 3,4,5, method, builder's square method, theodolite method	<ul style="list-style-type: none"> • Discuss each method with sketches Demonstrate each method of setting out practically 	-do-

COURSE: Building Construction 1		Course Code: BLD 103	Contact Hours: 2-0-3
COURSE SPECIFICATION: Theoretical Content			
General Objective 3.0: Understand the general principles of selecting and preparing sites to receive various types of foundations.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5	3.1 Explain the methods of excavation; 3.2 List the tools used in manual method of excavation. 3.3 Describe the principal equipments used in excavation.	<ul style="list-style-type: none"> • Discuss the methods of excavation. • Show the students the various manual excavation tools. 	<ul style="list-style-type: none"> • Chalk Board, shovel, spade, etc.
6	3.4 Explain with sketches the different methods of earthwork support to trenches in different types of soils. 3.5 Define the term foundation.	<ul style="list-style-type: none"> • Make students to carry out good sketches of earthwork supports. 	<ul style="list-style-type: none"> • Chalk Board.
7 - 9	3.6 Explain the importance of foundation to building structure. 3.7 List the various types of soils and how they affect choice of foundation 3.8 Illustrate by simple calculate the area of concrete foundation. 3.9 Describe the different types of foundations and their applications.	<ul style="list-style-type: none"> • Use question and answer to discuss the importance of foundation. • Students be made to participate in the calculation process. • Use question and answer to explain the types of foundation. 	Chalk Board
10 - 11	3.10 illustrate simple methods of reinforcement in foundations ground beams, sheet piles, bearing piles, etc. 3.11 Explain the methods of construction of the various types of foundations.	Use question and answer.	
General Objective 4.0: Understand the principle of damp proofing in building.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
12 - 13	4.1 Describe the processes of the rising and seepage of ground and underground water. 4.2 Explain the importance of damp-proofing in structural works. 4.3 Identify the functions of damp-proof courses.	<ul style="list-style-type: none"> • Demonstrate with existing building/or • Classroom. 	

COURSE: Building Construction 1		Course Code: BLD 103	Contact Hours: 2-0-3
COURSE SPECIFICATION: Theoretical Content			
14	<p>4.4 Explain the principle of tanking in basement works.</p> <p>4.5 Explain the processes of damp-proofing materials in use.</p> <p>4.6 Enumerate the various damp-proofing materials in use.</p> <p>4.7 Explain the importance of hard-core.</p> <p>4.8 Explain the use of blinding.</p> <p>4.9 State the use of anti-termite treatment in foundation works.</p>	<ul style="list-style-type: none"> • Demonstrate with appropriate sketches. • Discuss with practical examples. <p style="text-align: center;">-do-</p>	<ul style="list-style-type: none"> • Chalk Board <p style="text-align: center;">-do-</p>
<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should be acquainted with the buildings components involved in building construction and understand the various components of a building.</p> <p>References: 1. Ivor H. Seelay "Building Technology" fifty Edition Machillam</p>			

Building Construction II

Course: Building Construction II		Course Code: BLD 104	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
General Objective 1.0: Know the different types of floors			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 2 3	1.1 State the functions of floors. 1.2 Enumerate the various types of ground floors. 1.3 Explain the methods of constructing the various types of floors. 1.4 Draw the various types of floors. 1.5 Explain with drawings the methods of constructing timber floors. 1.6 Enumerate the various types of suspended floors. 1.7 State the methods of constructing suspended floor.	• Use question and answer to discuss the types of ground floors. • Demonstrate with appropriate sketches. • Make students to carry out good sketches.	• Chalk board • Chalk board.
4	1.8 Draw the various types of suspended floors 1.9 State the materials for these types of floors. 1.10 State the differences between ground floors and suspended floors.	• Use question and answer to discuss suspended floors.	• Chalk board
General Objective 2.0: Understand masonry wall construction			
Week	Specific Learning Outcome	Teachers Activities	Resources
5	2.1 State the functions of walls. 2.2 List the various types of walls in use e.g. load bearing, non-load bearing etc. 2.3 Explain with drawings the methods of constructing these various types of walls.	• Use question and answer to discuss walls. • Demonstrate with sketches.	• Chalk board
6	2.4 Enumerate the materials used in wall construction. 2.5 Illustrate with drawings the various block wall constructions.	• Carry out neat sketches	• Chalk board, • Drawing board, • Drawing instruments
7	2.6 Define partition walling 2.7 State the functions of partition walls 2.8 Enumerate the various types of partition walls. 2.9 Illustrate with sketches how partition walls are constructed	• Demonstrate with sketches.	• Chalk board, • Drawing Studio

Course: Building Construction II		Course Code: BLD 104	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
8	2.10 Explain the merits and demerits of the various types of partition walls. 2.11 Draw a typical timber partition wall using timber frame.	• Demonstrate with sketches	• Chalk board, • Drawing Studio
General Objective 3.0: Staircases			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	3.1 Define stair and staircase 3.2 List the various types of staircases 3.3 Define the terminologies used in staircase construction	• Use question and answer to discuss types of staircases	• Chalk board
10	3.4 Draw the various types of staircases in plan, elevations and sections 3.5 Derive risers, tread sizes, width of flight, width of mid-landing, etc. for the various types of staircases listed in 3.2	• Demonstrate the sketches	• Chalk board • and Drawing Studio
11	3.6 Describe with the aid of sketches and according to building regulation requirements, the method of constructing various types of staircases in timber, steel and reinforced concrete.	Demonstrate the sketches	Chalk board, Drawing Studio
General Objective 4.0: Know the types of roofs and ceiling structures and Coverings			
Week	Specific Learning Outcome	Teachers Activities	Resources
12	4.1 Explain with illustration the methods of construction of various roof structures in timber, concrete and steel. 4.2 State the properties and fixing details of various roof covering.	• Demonstrate sketches	• Chalk board, • Drawing Studio
13	4.3 Explain with illustration, the drainage systems of the various types of roofs. 4.4 Describe with drawings the water proofing systems of the various types of roofs.	• Demonstrate sketches	• Chalk board, • Drawing Studio
14 15	4.5 Enumerate the various types of ceilings. 4.6 State the functions of these types of ceilings. 4.7 Explain the methods of constructing the ceilings in 4.5.	• Demonstrating sketches	• Chalk board • Chalk Board & Studio board

Course: Building Construction II	Course Code: BLD 104	Contact Hours: 2-0-3
Course Specification: Theoretical Content		
	<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should be familiar with the various components of a building</p> <p>References: 1. R. Chudley "Construction Technology" Volumn 1-4 longman</p>	

Building Construction III

Course: Building Construction III		Course Code: BLD 203	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
General Objective 1.0: Know the use of scaffolding			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 2	1.1 Explain the principles of scaffolding 1.2 State the use of scaffolding in walls, roof and suspended roof construction. 1.3 Explain the procedure for providing scaffolding for the various building types. 1.4 Explain the use of form work in floor construction.	• Use question and answer to discuss • Use question and answer to discuss	• Chalk board • Chalk board
General Objective 2.0: Know the various types of fenestration in buildings.			
Week	Specific Learning Outcome	Teachers Activities	Resources
3 - 9	2.1 Explain the functional requirements of openings. 2.2 Explain the treatment of doors, windows and other openings in wall. 2.3 Explain the use of lintel and arches in fenestrations. 2.4 List the various types of doors. 2.5 List the main principles to be observed in the construction of doors and framing of joiners work in general. 2.6 Describe with the aid of sketches the methods of constructing the different types of framed and flush doors. 2.7 Describe the different types of door linings. 2.8 Explain the difference between a door frame and a door lining 2.9 Describe the methods of fixing doorframes and linings to openings. 2.10 List the various types of metal doors and the common materials used in their construction. 2.11 Describe with the aid of sketch a flush and a panel metal door. 2.12 Define the term iron-mongery. 2.13 List the method by which windows are classified. 2.14 Describe with sketches the method of constructing the various types of windows.	• Give various examples • Discussions using question and answer • Demonstrate with sketches. • Explain with examples • Involve students in the discussion • Demonstrate with neat sketches.	• Chalk board • Chalk board • Chalk board • Drawing instruments • Chalk board • Chalk board • Chalk board • Drawing equipment

Course: Building Construction III		Course Code: BLD 203	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
10	2.15 Illustrate the various components of doors and windows.		
General Objective 3.0: Know the different types of finishes for Floors, walls, and ceilings.			
Week	Specific Learning Outcome	Teachers Activities	Resources
11 - 15	<p>3.1 State the functions of finishes on floors, walls, and ceilings. Illustrate the different types of floor finishes in relation to their functions, e.g terrazzo, grano, PVC etc in terms of internal and external functions.</p> <p>3.2 Illustrate the different types of wall finishes in relation to their functions in terms of internal and external functions.</p> <p>3.3 Illustrate the different types of ceiling finishes in relation to their functions in terms of internal and external functions.</p> <p>3.4 Explain the use of various types of paints for different surfaces in relation to their finishes.</p>	<ul style="list-style-type: none"> • Give various examples during discussion. • Use questions and answer to discuss. • Use question and answer to discuss. • Discuss with examples 	<ul style="list-style-type: none"> • Chalk board. • Chalk board • Chalk board
<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should understand the use of scaffolding, fenestration and finishes to structural members of building.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Bowyer "Building Technology" 2. Adams, E. C. "Fundamentals of Building" 			

Building Construction IV

Course: Building Construction IV		Course Code: BLD 204	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
General Objective: 1.0 Understand the needs for External works around the Building			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
1 - 7	1.1 Explain the essence of having external works around a building. 1.2 State the functions of external works. 1.3 Explain the functions of fencing and hedges in building. 1.4 State the conditions for providing roads, pathways, and parking lots to buildings. 1.5 State the functions of sewage plants, e.g. septic tank, soakaways, manholes, inspection chambers, sewers etc. 1.6 Explain with illustration how sewage plants above are constructed. 1.7 State the underlying principles in planning a good drainage system. 1.8 Apply the principles of landscaping to a given site layout including all items of external works.	<ul style="list-style-type: none"> • Use question and answer • Demonstrate with sketches during discussion. • Lecture • Lecture with Sketches 	<ul style="list-style-type: none"> • Chalk board • Chalk board • Chalk board • Studio and Drawing equipment.
General Objective 2.0: Understand the general administration of Building.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
8 - 11	2.1 Explain the responsibilities of the various parties involved in the building industry-client, architect, quantity surveyor, builders etc 2.2 Define contract, different types of contracts, signing and completion of contracts. 2.3 Describe the different types of tendering procedure	<ul style="list-style-type: none"> • Lecture • Use questions and answers <li style="text-align: center;">- Ditto - 	<ul style="list-style-type: none"> • Chalkboard
	2.4 Outline the methods of site layout and organization, reconstruct planning services on site, safety and security	- Ditto-	

Course: Building Construction IV		Course Code: BLD 204	Contact Hours: 2-0-3
Course Specification: Theoretical Content			
General Objective 3.0 Understand various requirements as Regards Fire precautions and regulations as applied to building.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
12 - 15	3.1 List fire-fighting equipment in building. 3.2 Describe means of escape and route 3.3 List fire precautions in building 3.4 Define fire resistance materials in building. 3.5 Describe various burglar-proofing materials in buildings. 3.5 Fix burglar-proofing materials.	<ul style="list-style-type: none"> • Discuss with examples. • Use question and answer to discuss. 	<ul style="list-style-type: none"> • Chalk board
<p>Assessment: Coursework: 20%, Course Test 20%, Practical: 0%, Examination: 60%</p> <p>Competency: The Student should be able to carry out external work, general administration of building construction including precautions against fire</p> <p>References:</p> <ol style="list-style-type: none"> 1. Hall, F. Plumbing Cold Water supplies, drainage 2. Butler, J. T. Element of administration for building students 			

Workshop Practice and Technology I

Course: Workshop Practice and Technology I		Course Code: BLD 105	Contact Hours: 0-0-4
Course Specification: Theoretical Content			
General Objective 1.0: Know blocklaying and Concreting Tools, equipment and their uses and maintenance Procedure			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1 - 3	<p>1.1 Select bricklaying and concreting tools and equipment such as blocklaying trowel, pointing trowel, spirit level, builders square, straight edge (range), wooden float, concrete mixers, vibrators, concrete forms, and block moulding machines for specific job requirements.</p> <p>1.2 Use the tools and equipment in 1.1 above. Maintain the tools and equipment in 1.1 above select, cutting and plastering tools such as club hammer, bolster chisel, cold chisel, brick saw; and hark saw for specific job requirements.</p>	<ul style="list-style-type: none"> • Demonstrate the use of various bricklaying and concreting tools. • Demonstrate the use of cutting and plastering tools. • Demonstrate maintenance of the tools. 	<ul style="list-style-type: none"> • Workshop tools and equipment. <p>Different trowels, spirit level, builders square, straight edge (range), wooden float, concrete mixers, vibrators, concrete forms, block moulding machine and consumables, Cutting and plastering tools.</p>
General Objective 2.0: Understand Factory Acts and Safety regulations Applicable in the blocklaying and concreting workshop			
Week	Specific Learning Outcome:	Teachers Activities	Resources
4 - 6	<p>2.1 Choose adequate ventilation for the workshop</p> <p>2.2 Create safe storage of tools and first aid equipment</p> <p>2.3 Demonstrate general safety habits with respect to the equipment</p> <p>2.4 Demonstrate the layout of an ideal blocklaying and concreting workshop</p>	<ul style="list-style-type: none"> • Demonstrate how to create safe storage of tools and first aid equipment. • Demonstrate how to layout block laying and concreting workshop. 	<ul style="list-style-type: none"> • Workshop and consumables

Course: Workshop Practice and Technology I		Course Code: BLD 105	Contact Hours: 0-0-4
Course Specification: Theoretical Content			
General Objective 3.0: Know blocks and concrete materials.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
7 - 10	<p>3.1 Differentiate between various types of fine aggregates, coarse aggregate, blocks, concrete and additives.</p> <p>3.2 Illustrate types of concrete products</p> <p>3.3 Select suitable aggregates for different kinds of construction works.</p> <p>3.4 Carry out various tests on blocks and concrete material.</p>	<ul style="list-style-type: none"> Show different types of fine and coarse aggregates, blocks, concrete and additives. Show how to carry out tests on blocks and concrete. 	<ul style="list-style-type: none"> Workshop and consumables e.g. sand, gravel, cement and additives.
General Objective 4.0: Understand the various methods of block & Bricklaying and concreting			
Week	Specific Learning Outcome:	Teachers Activities	Resources
11 - 13	<p>4.1 Lay blocks of various types and sizes</p> <p>4.2 Lay wet concrete for simple slabs, beams and lintels.</p> <p>4.3 Carry out various ways of vibrating, finishing and curing concrete.</p>	<ul style="list-style-type: none"> Demonstrate how to lay blocks of various types and sizes. Demonstrate how to cast concrete slabs beams and lintels. Demonstrate various ways of vibrating, finishing and curing concrete 	<ul style="list-style-type: none"> Workshop and consumables e.g. blocks, cement, gravel sand etc.
General Objective 5.0: Know different types of brick and block walls and their types of bonds			
Week	Specific Learning Outcome:	Teachers Activities	Resources
14 - 15	<p>5.1 Construct various types of bonds in a block work and brickwork.</p> <p>5.2 Construct block walls of different thickness.</p>	<ul style="list-style-type: none"> Demonstrate how to construct various types of bonds in a block work and brick work. Engage students to construct. 	<ul style="list-style-type: none"> Workshop and consumables e.g. blocks, bricks etc.

Course: Workshop Practice and Technology I	Course Code: BLD 105	Contact Hours: 0-0-4
Course Specification: Theoretical Content		
	<p>Assessment: Coursework: 20%, Course Test 20%, Practicals: 20%, Examination: 40%</p> <p>Competency: The Student should be able to able to construct walls made from bricks, blocks and concrete</p> <p>References:</p> <ol style="list-style-type: none"> 1. Obande "Bricklaying and Concreting" Longman 2. Kienlighter, C. E. "modern masonry brick, block, store" 	

Workshop Practice and Technology II

Course: Workshop Practice and Technology II		Course Code: BLD 106	Contact Hours: 60
Course Specification: Practical Content			
General Objective: Know Woodworking tools and Equipment			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	1.1 Use the cramps, shooting boards and benches 1.2 Use geometrical tools such as marking gauges tapes, pencil, caliper and wing compasses, tee square and sliding level.	• Demonstrate how each tool and equipment is used.	• Workshop cramps, shooting boards, benches, marking gauges tapes, pencil, caliper & wing compasses, tee square, sliding level
2	1.3 Use cutting tools such as saws chisels and planes 1.4 Illustrate the differences between fixing tools such as Hammer, Mallets, Nail punches, Screw drivers and the Ratchet Brace.	• Demonstrate how each tool and equipment is used.	• Saws, chisels and planes, hammer, mallets nail punches, screw drivers, ratchet brace.
General Objective 2.0: Understand Factory Acts and Safety Regulations applicable in the Wood workshop			
Week	Specific Learning Outcome	Teachers Activities	Resources
3	2.1 Propose adequate ventilation for the workshop 2.2 Create storage facility for tools and first aid equipment. 2.3 Demonstrate general safety habits with respect to both electrical machinery 2.4 Illustrate the layout of an ideal wood-workshop.	• Discuss factory acts. • Discuss safety regulations. • Discuss how to create storage facility for tools and first aid equipment.	• Factory acts safety regulations. • First aid equipment

Course: Workshop Practice and Technology II		Course Code: BLD 106	Contact Hours: 60
Course Specification: Practical Content			
General Objective 3.0: Know the types of Timber used for various work Purposes.			
Week	Specific Learning Outcome	Teachers Activities	Resources
5 6 7 8	3.1 Differentiate hardwood from softwood. 3.2 Explain their respective formation processes. 3.3 Illustrate the growth, structure and shrinkage of timber. 3.4 Describe suitable timber conversion methods such as slab saw, tangential sawing and quarter sawing. 3.5 Explain seasoning methods of Timber such as natural/air seasoning, kiln seasoning - compartment kilns, progressive kilns, combined air and kilns method, chemical seasoning and pre-steaming advantage of kiln seasoning.	• Show sample soft hard wood and softwood • Use question and answer to discuss. • Use question and answer to discuss. • Discuss seasoning methods. • Engage students in the discussion.	Workshop
9	3.6 Describe timber preservation methods: Wood preservatives oil method: Waterborne preservative method: 3.7 Describe other preservation methods like pressure process, open tank - hot Bath process, and brush, dip stray application. 3.8 Analyse diffusion process. 3.9 Identify the various types and sizes of timber available for use in the market.	• Discuss preservation methods with practical examples. • Engage students in the discussion. • Engage students to discuss diffusion process. • Show students various sizes of available timber.	

Course: Workshop Practice and Technology II		Course Code: BLD 106	Contact Hours: 60
Course Specification: Practical Content			
General Objective 4.0: Know the various types of wood joints			
Week	Specific Learning Outcome	Teachers Activities	Resources
10	4.1 Construct widening joints and tongue and groove joints. 4.2 Construct the following joints: a. Frame joint. b. Tee and cross halving joint. c. Common mortise and tenon Haunched tenon joint. d. Long and short shouldered mortise and tenon with rebate.	<ul style="list-style-type: none"> • Demonstrate how to construct the various joints • Engage students to construct. 	<ul style="list-style-type: none"> • Workshop
11	4.3 Construct angle joints such as dovetail joint, housing joint and dowel joint	<ul style="list-style-type: none"> • Demonstrate how to construct • Engage students to construct 	<ul style="list-style-type: none"> • Workshop consumables (Planks).
General Objective 5.0: Know the different types of Jointing materials			
Week	Specific Learning Outcome	Teachers Activities	Resources
12	5.1 Use nails of different sizes on given job types.	<ul style="list-style-type: none"> • Demonstrate how to use nails of different sizes. 	Workshop and consumables (nails, screws of various types, bolts and nuts, timber connectors etc.
13	5.2 Use various types of screws such as raised head, round head, countersunk head and coach or square head on given job types. 5.3 Use other materials such as bolts and nuts, timber connectors etc. 5.4 Classify wood adhesives, e.g. Thermo-setting and Termoplastic. 5.5 Differentiate properties of animal and synthetic resin adhesives and their advantages i.e. epoxy resin, polyvinyl acetate (P.V.A) and rubber based adhesives: their advantages and applications	<ul style="list-style-type: none"> • Demonstrate use of various types of screws. • Demonstrate use of bolts and nuts, timber connectors. • Discuss wood adhesives. • Show samples and limitation of application. 	Wood adhesives such as thermo-setting and thermoplastic, resins.

Course: Workshop Practice and Technology II		Course Code: BLD 106	Contact Hours: 60
Course Specification: Practical Content			
General Objective 6.0: Know the various woodworking machine in use			
Week	Specific Learning Outcome	Teachers Activities	Resources
14-15	6.1 Classify woodworking machines e.g. <ul style="list-style-type: none"> a. Planing machine b. Sawing machine c. Band saw machine d. Spindle moulding machine e. Drilling machine f. Mortiser and Tenoning machine g. Sanding and portable hand machines. 6.2 Use the machines in 6.1 6.3 Maintain the machines listed in 6.1 above	<ul style="list-style-type: none"> • Identify the listed machines • Demonstrate use of machines • Demonstrate the maintenance 	<ul style="list-style-type: none"> • Workshop with: Planning Machine, Sawing Machine, Band saw machine, Spindle moulding machine, Drilling machine, Mortiser and tenoning machine, Sanding and portable hand machines.
<p>Assessment: Coursework: 20%, Course Test 20%, Practicals: 20%, Examination: 40%</p> <p>Competency: The Student should be familiar with the use of woods and wood working tools and machines.</p> <p>References:</p> <ol style="list-style-type: none"> 1. R. Bayliss "Carpentary and Joinery" Book 1-4 2. G. Barber "Builders' plat and equipment" 2nd Edition 			

Workshop Practice and Technology III

Course: Workshop Practice and Technology III		Course Code: BLD 205	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 1.0: Know painting and decoration and their effects on buildings			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	1.1 Define the terms painting and decoration as they apply to building and other facilities. 1.2 List the components of paint. 1.3 Explain the function of each of the constituents used in making paints.	• Use question and answer to discuss painting and decoration.	• Workshop consumables • (Paint)
2	1.4 Describe the types of paint in use and their specific peculiarities; i.e. emulsion, oil etc. 1.5 State the conditions for use of each paint type.	• Provide types of Paints.	• Workshop consumables • (Paint)
3	1.6 Illustrate the methods of preparing surfaces for painting 1.7 Demonstrate the methods of application of paint. 1.8 Apply paint to surface materials like block/brick work, concrete, metal etc. 1.9 Maintain paint brushes, rollers, spray guns, etc.	• Demonstrate to the students how to mix paints in correct proportions.	• Workshop consumables • (Paint)
General Objective 2.0: Understand the Preservative Characteristics of Paint.			
Week	Specific Learning Outcome	Teachers Activities	Resources
4	2.1 Discuss the preservation characteristics of paint, i.e. moisture prevention, rust prevention, etc 2.2 Mix paint to the right constituents for application using brush, roller or spray gun. 2.3 Identity additives which are available for use as preservative and weathering preventive treatment.		• Workshop and Consumables

Course: Workshop Practice and Technology III		Course Code: BLD 205	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 3.0: Paint work			
Week	Specific Learning Outcome	Teachers Activities	Resources
5	3.1 Identify the defects in paint work. 3.2 State their causes and remedies.	<ul style="list-style-type: none"> • State the defects in Paint work. • State their causes and remedies to the student. 	<ul style="list-style-type: none"> • Workshop and Consumables
General Objective 4.0: Plumbing Tools and Equipment			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	4.1 Identify plumbing tools and equipment. 4.2 Select plumbing tools and equipment for use. 4.3 Use the tools in 4.1 and portable power tools and equipment. 4.4 Maintain the tools used in 4.2 above.	<ul style="list-style-type: none"> • Show the students plumbing tools and equipment. 	<ul style="list-style-type: none"> • Workshop and Consumables
General Objective 5.0: Understand Factory Acts and Safety Regulations Applicable in In the plumbing Workshop			
Week	Specific Learning Outcome	Teachers Activities	Resources
7	5.1 Safety and Upkeep of Workshop. 5.2 Propose adequate ventilation for the workshop. 5.3 Create safe storage facilities for tools and first aid equipment.	<ul style="list-style-type: none"> • Show the students how the workshop can be well ventilated. • Show them how to store tools. 	
8	5.1 Demonstrate general safety habits with respect to plumbing equipment and tools. 5.2 Illustrate the layout of an ideal plumbing workshop.	<ul style="list-style-type: none"> • Demonstrate to the students safety habits to be observed in the workshop 	

Course: Workshop Practice and Technology III		Course Code: BLD 205	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 6.0: Plumbing Materials for various Jobs Purposes			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	6.1 Select pipes and tubes used in plumbing work for cold water, waste, soil and ventilation pipe, drainage and domestic control heating.	• Select and show the students appropriate pipes and tubes for plumbing work.	
10	6.2 Identify their sizes, weights and gauges. 6.3 Apply methods of jointing, manipulation and fixing 6.4 Prepare threading and jointing pipes in galvanised iron copper and plastics.	• Demonstrate how to thread pipes and jointing methods.	• Workshop and consumables (Pipes and Tools).
General Objective 7.0: Water Supply			
Week	Specific Learning Outcome	Teachers Activities	Resources
11	7.1 Explain the properties of water based on common sources of supply. 7.2 State the rules to be followed in piping for water supply.\	• Explain to the students properties of water based on its source. • State rules for piping.	• Black Board and Chalk
12	7.3 Observe connections to water mains 7.4 Illustrate the domestic systems of cold and hot water supply.	• Demonstrate how pipe connections are made. • Show the students connections for a domestic water supply	• Workshop
General Objective 8.0: Know the different methods of installing and fixing appliances			
Week	Specific Learning Outcome	Teachers Activities	Resources
13	8.1 Illustrate plumbing constructional features. 8.2 Install sanitary appliances, fittings, soil/water, ventilation pipes.	• Demonstrate to the students how to install sanitary appliances.	• Workshop consumables

Course: Workshop Practice and Technology III		Course Code: BLD 205	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 9.0: Drainage Systems			
Week	Specific Learning Outcome	Teachers Activities	Resources
14	9.1 Show general layout and construction method of drainage systems.	<ul style="list-style-type: none"> • Demonstrate general layout of workshop. • Show how drainage systems are constructed. 	• Workshop consumables
15	9.2 Differentiate between private and public sewage systems. 9.3 Test drains and solid pipes.	<ul style="list-style-type: none"> • Explain private sewage system and also public sewage system. • Show the students how to test drains and solid pipes. 	• Workshop consumables
<p>Assessment: Coursework: 20%, Course Test 20%, Practicals: 0%, Examination: 60%</p> <p>Competency: The Student should be familiar with use of paints and decorations. They should also acquaint themselves with the safety regulations in the plumbing workshop.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Tubb, L. F. J. "Painting and Decorating 2. Hall, F. Plumbing 			

Workshop Practice & Technology IV

Course: Workshop Practice & Technology IV		Course Code: BLD 206	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 1.0: Understand Electrical Installation Involved in the building process			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1	<p>1.1 Explain the safety precautions required in workshops and site e.g. how human body can become part of electric circuit and remedy; severe shock and artificial respirations</p> <p>1.2 Describe electrical symbols and regulations with special reference to I.E.E. Regulations</p> <p>1.3 Identify tools and equipment used in simple electrical works and their maintenance requirements.</p> <p>1.4 Identify accessory types in use, e.g. ib, Sw, dfb, ccu plug and the like. Main switches, fuses, distribution boards and other protective systems, e.g. ELCB.</p>	<ul style="list-style-type: none"> • Explain the safety regulations required in the workshop. • List Electrical symbols and explain each 	<ul style="list-style-type: none"> • Workshop Chalk board
2	<p>1.5 Explain the process of electricity generation, transmission and distribution.</p> <p>1.6 Describe the different types of generators used on site with emphasis on portable generators.</p> <p>1.7 Explain electrical power distribution systems, e.g. 1 and 4 wire system for both A.C. & D.C.</p> <p>1.8 Explain the meaning of power factor and the effect of power factor on cable sizes.</p>	<ul style="list-style-type: none"> • Explain generation, transmission and distribution of electricity • Explain AC, DC systems. 	<ul style="list-style-type: none"> • Workshop Chalk board
3	<p>1.9 Describe types of cables and where they are used, e.g MICO.</p> <p>1.10 Identify cable colours and regulations applicable.</p> <p>1.11 Illustrate the current rating of cables, cable joints.</p> <p>1.12 Soldering techniques and regulations applicable.</p>	<ul style="list-style-type: none"> • List, describe types of cables • Demonstrate preparation of cables for use. 	<ul style="list-style-type: none"> • Workshop Chalk board • Consumables (cables)

Course: Workshop Practice & Technology IV		Course Code: BLD 206	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 1.0: Understand Electrical Installation Involved in the building process			
Week	Specific Learning Outcome:	Teachers Activities	Resources
3	1.13 Prepare ends of cable for entry into accessories. 1.14 Install the following electrical wiring-conduit and surface.	<ul style="list-style-type: none"> List, describe types of cables Demonstrate preparation of cables for use. 	<ul style="list-style-type: none"> Workshop Chalk board Consumables (cables)
4	1.15 Describe PVC. 1.16 Carry out bending, cutting and threading of conduit. 1.17 List the types of conduits for practical wiring exercises.	<ul style="list-style-type: none"> Show the students PVC conduit and describe its use. 	<ul style="list-style-type: none"> Workshop Consumables: PVC Conduit pipes
5	1.18 Demonstrate the following practical wiring diagrams: simple lighting points wiring 1-way, two-way, and intermediate switches. 1.19 Illustrate series, parallel and series in parallel circuits	<ul style="list-style-type: none"> Demonstrate practical wiring like one way, two way and intermediate switches. 	<ul style="list-style-type: none"> Workshop consumables e.g. wires, switches, light points, (lamp holders) etc.
6	1.20 Demonstrate wiring Socket outlet plugs looping system 1.21 Prepare conversion from one-way to two-ways electrical bells and indicating systems. 1.22 Describe regulations applicable to earthing systems.	<ul style="list-style-type: none"> Demonstrate further wiring e.g Socket outlet plugs looping system Conversion from one-way to two-ways electrical bells and indicating systems. 	<ul style="list-style-type: none"> Workshop consumables.

Course: Workshop Practice & Technology IV		Course Code: BLD 206	Contact Hours: 0-0-4
Course Specification: Practical Content			
General Objective 2.0: Know the construction of a small model Building complete with all essential services and finishes			
Week	Specific Learning Outcome:	Teachers Activities	Resources
7-14	2.1 List basic instruments used for setting out. 2.2 Demonstrate the use of the tools listed in 2.1 above 2.3 Set out the first course of walling for door opening. 2.4 Construct wall to window level. 2.5 Set out the various windows and their openings 2.6 Construct wall to lintel level 2.7 Cast lintels 2.8 Construct wall up to roof level 2.9 Carry out roof construction 2.10 Fix appropriate roof covering 2.11 Fix window and door frames 2.12 Fix doors and windows 2.13 Fix pipes for plumbing and electrical works. 2.14 Fix plumbing and sanitary appliances in appropriate positions 2.15 Carry out ceiling construction 2.16 Fix ceiling boards.	<ul style="list-style-type: none"> • List and show the students tools for setting out a building • Set out a building • Demonstrate how to set out 1st course of walling for door opening. • Set out openings for doors and windows • Demonstrate laying block wall to lintel level • Demonstrate construction of roof. • Demonstrate fixing of fittings like doors and windows • Demonstrate fixing of further fittings e.g. services (plumbing) • Demonstrate how to construct ceiling. 	<ul style="list-style-type: none"> • Workshop consumables (pegs, nails, battens, line builder's square) • Workshop consumables (cement, sand, trowels, line, spirit level etc. • Workshop consumables • Workshop consumables. • Workshop consumables • Workshop consumables
15	2.17 Plaster walls internally and externally 2.18 Lay appropriate floor finishes 2.19 Fix wall and floor tiles as required 2.20 Correlate electrical wiring 2.21 Fix electrical fittings	<ul style="list-style-type: none"> • Demonstrate how finishes to a building is done e.g. plastering • Demonstrate electrical fittings. 	<ul style="list-style-type: none"> • Workshop consumables • Workshop consumables.
<p>Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination: 60%</p> <p>Competency: The Student should be able to construct model Building with all the essential services and finishes.</p> <p>Reference: 1. MC Guinness, W.J. Building Technology: Mechanical and Electrical System”</p>			

Building Services and Maintenance Courses

Maintenance Technology

Course: Maintenance Technology		Course Code: BLD 208	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 1.0: Understanding the meaning of the terms used in maintenance and repairs and related facilities.			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 3	1.1 Define the terms used in the practice of repairs and maintenance of building and related facilities. 1.2 Explain the terms used in building of maintenance and related facilities.	<ul style="list-style-type: none"> • Explain the meaning of maintenance generally, narrow this to building maintenance • Give the various terms used in building maintenance 	<ul style="list-style-type: none"> • Chalkboard, chalk, duster
General Objective 2.0: Understanding the ground geological fault and their effect on building.			
	Specific Learning Outcome	Teachers Activities	Resources
4 - 6	2.1 Explain the geological faults which cause defect in the foundation of building. 2.2 Explain the effect of foundation failures on the walls of buildings. 2.3 Illustrate the ground faults and the remedies to foundations. 2.4 Describe the remedies to various foundation failures.	<ul style="list-style-type: none"> • Explain faults generally • Explain the meaning of geological fault • Show how such fault cause defects in foundation of building • Show the effect of foundation failures on the walls of building • Explain how these faults can be remedied 	Ditto
General Objective 3.0: Understanding the types of defects which affect brick, blockworks and masonry and remedies for them			
	Specific Learning Outcome	Teachers Activities	Resources
7-9	3.1 State the types of defects in brick, sandcrete wall, block wall, sand masonry walls and timber. 3.2 Explain the causes of decay in block-wall and sandcrete wall and masonry wall and timber. 3.3 Explain the remedies for the above defects in 3.1	<ul style="list-style-type: none"> • Explain the various defects walls. • Give examples of such defects question/answers of decay in wall and timber. • Question/answer on causes of decay in walls and timber. • Explain remedies for decay in walls and timber. 	Ditto

Course: Maintenance Technology		Course Code: BLD 208	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 4.0: Understand the causes of defect and their remedies in low-rise buildings.			
	Specific Learning Outcome	Teachers Activities	Resources
10 -15	<p>4.1 State the types of defects in roofs.</p> <p>4.2 Explain the causes of defects in roofs.</p> <p>4.3 Propose simple methods of prevention and remedies for 4.1 above.</p> <p>4.4 Propose simple methods of remedying the defects in low rise building.</p> <p>4.1 Explain the case and effects of rising damp and penetrating damp on structure and fabric e.g. walls, floors, roofs etc.</p> <p>4.2 State the effect of technology on maintenance.</p>	<ul style="list-style-type: none"> • Explain using questions and answers. • Give examples and show practical cases. 	Chalkboard.
<p>Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination: 60%</p> <p>Competency: The Student should be familiar with various defects in buildings and should know their remedial measures..</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. CROLL, J.G.A 2 Elements of Structural stability” 2. LEE, R. Building Maintenance Management” 			

Building Services

COURSE: Building Services		Course Code: BLD 207	Contact Hours: 1-1-0
COURSE SPECIFICATION			
General Objective 1.0: Know the sources, quality and classification of water.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Identify sources of water 1.2 State the quality of water from the sources in 1.1. 1.3 State the two classes of water, viz hard and soft water. 1.4 Describe the methods of purification of water.	<ul style="list-style-type: none"> • Introduce course to students. • Explain sources of water. • Differentiate between hard and soft water. • Describe methods of purifying water. 	<ul style="list-style-type: none"> • Chalkboard, chalk, duster.
General Objective 2.0: Know the system of distribution of pipe-work for domestic cold water supply			
Week	Specific Learning Outcome	Teacher's Activities	Resources
4-6	2.1 Illustrate the direct and indirect method of water supply. 2.2 Identify the sizes and types of pipes used along the distribution system 2.3 Describe with sketches cold water supply system. 2.4 Describe means of providing drinking water 2.5 Differentiate between communication, service, supply, distribution and overflow pipes	<ul style="list-style-type: none"> • Discuss pipe sizing and types • Explain and illustrate the direct and indirect methods of water supply 	
General Objective 3.0: Understand hot water supply system Hot Water Supply Systems			
Week	Specific Learning Outcome	Teacher's Activities	Resources
7-8	3.1 State the two system of hot water supply 3.2 Describe direct and indirect systems of hot water supply 3.3 Identify need for sizing of pipes and precaution against dead leg	<ul style="list-style-type: none"> • Describe and illustrate hot water supply system • Show and sketch hot water supply system. 	

COURSE: Building Services		Course Code: BLD 207	Contact Hours: 1-1-0
COURSE SPECIFICATION			
General Objective 4.0: Know the basic sanitary appliances fittings and their uses			
Week	Specific Learning Outcome	Teacher's Activities	Resources
9-10	<p>4.1 Identify the following appliances and their functions WC, Urinal, Bidet, various showers, wash hand basin sink, tap and valves.</p> <p>4.2 Sketch the fittings in 4.1.</p> <p>4.3 State the construction requirements for installing the sanitary appliances.</p>	<ul style="list-style-type: none"> • Explain the following sanitary appliances W.C Urinal, Bidet various showers, wash hand basins, sinks, taps and valves • Discuss the construction requirements for the installation of sanitary appliances 	
General Objective 5.0: Know the various types of drainage systems used in buildings			
Week	Specific Learning Outcome	Teacher's Activities	Resources
11-12	<p>5.1 Drainage Systems</p> <p>5.2 Identify the materials and fittings used in drainage work.</p> <p>5.3 Outline the combined and separate systems of drainage.</p> <p>5.4 Produce simple diagrams of the system in 5.2.</p> <p>5.5 State the merits and demerits of the separate and combined drainage system.</p>		
General Objective 6.0: Know the methods of providing lighting in buildings.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
13	<p>6.1 State artificial and natural lighting methods</p> <p>6.2 Describe how to provide artificial lighting in houses.</p> <p>6.3 Explain how to provide natural lighting in a house</p> <p>6.4 Describe how to integrate natural and artificial lighting in a house</p>	<ul style="list-style-type: none"> • Introduce student to daylight factor • Differentiate between natural and artificial lighting 	<ul style="list-style-type: none"> • Provide 'Daylight' factor chart

COURSE: Building Services		Course Code: BLD 207	Contact Hours: 1-1-0
COURSE SPECIFICATION			
General Objective 7.0: Know the electrical fittings and controls in a house			
Week	Specific Learning Outcome	Teacher's Activities	Resources
14-15	<p>7.1 State the common standard cables used for different fittings.</p> <p>7.2 List the electrical fittings and controls and their uses.</p> <p>7.3 Describe the construction provisions made for electrical fittings.</p> <p>7.4 Describe simple electric circuit system used in residential houses.</p> <p>7.5 Install simple electric wiring in low[rise building.</p>	<ul style="list-style-type: none"> • Introduce student to I.EE and NEPA Regulations • Show student by illustration the various cables and fitting appropriate to low rise buildings 	<ul style="list-style-type: none"> • I.E.E and NEPA Regulation
<p>Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination: 60%</p> <p>Competency: The students should understand the various services to building and how to provide drainage systems to buildings.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Hall, F. "Plumbing: Cold Water Supplies, Drainage" 2. Hall, F. "Plumbing: Hot Water Supply and eating Systems" 			

Civil Engineering Courses

Introduction to Structural Mechanics

COURSE: Introduction to Structural Mechanics		Code: BLD 108	Contact Hours: 1-1-0
Course Specification Theoretical Content			
General Objective 1.0: Understanding Dynamics using Newton's Laws of motion			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1-6	1.1 Understand Newton's Law of Motion and their appreciation. 1.2 Differentiate between impulse and momentum. 1.3 Define Kinetic Energy. 1.4 Identify Kinematics of Points. 1.5 Analyse the composition and resolution of velocities and Acceleration. 1.6 Differentiate relative Velocity and acceleration. 1.7 Present representation by vectors.	<ul style="list-style-type: none"> • Discuss Laws of Motion through the use of question and answer • Demonstrate the application of this Law by using an object at "rest", and an object in Motion. • Give examples of their application e.g Walking/running, paddling canoe etc. • Demonstrate the force of impulse by by striking a Nail with a hammer. • Discuss momentum as being the Product of Mass and Velocity of a body. • Use question and answer to discuss or explain Kinetic Energy. • Use question and answer to identify these points. • Discuss Velocity, acceleration using practical examples like an automobile starting from "rest" to attain a certain level of motion. • Discuss these terms by the use of vectors. • Use vectors to throw more light on the terms. 	<ul style="list-style-type: none"> • Chalk Board • Chalk Board • Chalk Board • Chalk Board • Chalk Board

COURSE: Introduction to Structural Mechanics		Code: BLD 108	Contact Hours: 1-1-0
Course Specification Theoretical Content			
General Objective 2.0: Understand the relations between stress and strain.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
7-12	2.1 Define load. 2.2 Explain tension and compression forces. 2.3 Explain stress and strain. 2.4 Define Hooke's Law. 2.5 Explain Modulus of Elasticity. 2.6 Explain the relation between stress and strain in tension. 2.7 Define limit of proportionality, elastic limit, yield point, ductility, brittleness and permanent set. 2.8 Explain shear stress, shear strain, modulus of rigidity, strain energy. 2.9 Illustrate the method of analysis of composite body with axial tension or compression	<ul style="list-style-type: none"> • Discuss load in terms of weight mass of a body. • Discuss tensional forces as those that act outwards as a body e.g. pull and compressional forces as those that acts inwards on a body e.g. push. • Discuss stress on a body as an abnormal condition e.g. A load acting on a body distorts the internal structural arrangement or pattern of the particles of that body. • Discuss strain as a change in shape or form the body undergoes due to stress. • Explain Hook's Laws emphasizing on words like limit of proportionality, yield stress and ultimate stress. • Discuss Modulus of Elasticity. • Illustrate by a sketch the relation between the two terms as being proportional when a body is in tension provided the Elastic limit is not exceeded. • Discuss and explain each of these terms using a graph of load against extension of mild steel when gradually loaded. • Discuss and explain these terms using illustrations. • Discuss the method of analysis of composite body under axial tension or compression by the application of appropriate equation/formula. 	<ul style="list-style-type: none"> • Chalk Board
General Objective 3.0: Understand static and graphical resolution of forces.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
13-15	3.1 Define equilibrium of concurrent and non-concurrent coplanar forces. 3.2 Illustrate Polygon of forces. 3.3 Analyse resolution of forces.	<ul style="list-style-type: none"> • Discuss concurrent forces. • Discuss non-concurrent forces. • Use graphical method to resolve these forces. • Use sketches to show Polygon of Forces. • Use graphical method to resolve forces into components or parts. 	<ul style="list-style-type: none"> • Chalk board

COURSE: Introduction to Structural Mechanics	Code: BLD 108	Contact Hours: 1-1-0
Course Specification Theoretical Content		
	<p>Assessment: Coursework: 20%, Course Test 20%, Practicals: 20%, Examination: 40%</p> <p>Competency: The Student should be familiar with dynamics, properties of materials and compute solve problems on statistically determinate structure.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Benham, P.P. "Mechanics of Solid and Structures" 2. Belyaer, N.M. "Strength of Materials" 	

Introduction to Theory of Structures

COURSE: Introduction to Theory of Structures	Course Code: BLD 201	Contact Hours: 2-0-0	
COURSE SPECIFICATION: Theoretical content.			
General Objective 1.0: Know how to determine reactions, Bending Moments, shear force values.			
Week	Specific Learning Outcome:	Teacher's Activities	Resources
	1.1 Define bending moments and shear force. 1.2 Describe types of loads, and types of support. 1.3 Explain the equation of equilibrium. 1.4 Illustrate sign conventions for bending moment and shear force diagrams. 1.5 Determine the relations between load, shear force and bending moment. 1.6 Calculate shear force and bending moment values on: (i) Simple supported beam and (ii) Cantilever beam with concentrated and uniformly distribution loads (UDC) 1.7 Draw bending moments and shear force diagram. 1.8 Use graphical method of determination of reactions, shear force and bending moments.	<ul style="list-style-type: none"> • Use question and answer to discuss bending moments and shear force. • List or mention types of loads e.g. Dead, live and wind loads. • Illustrate types of support such as fixed hinge and Roller supports. • State the equations of Equilibrium for Plane structures. • State the equations of equilibrium for Space structures. • State the sign convention for type of bending moment diagram and shear force diagrams. • Derive equations relating load, shear force and bending moments. • Show the students how to calculate Bending moment and shear force values for: <ul style="list-style-type: none"> (i) Simple supported beam. (ii) Cantilever beam (with concentrated and uniformly distributed load (UDL)). • Show the students how to draw bending moment and shear force diagrams. • Demonstrate to the students how to draw bending moment and shear force diagrams using graphical method. 	<ul style="list-style-type: none"> • Chalk Board • Chalk Board • Chalk Board Chalk Board • Chalk Board Chalk Board

COURSE: Introduction to Theory of Structures		Course Code: BLD 201	Contact Hours: 2-0-0
COURSE SPECIFICATION: Theoretical content.			
General Objective 2.0: Understand moments of inertia, Products of Inertia Max & Min Principal Axis, Neutral Axis, Bending. Stress, shear stress			
Week	Specific Learning Outcome:	Teacher's Activities	Resources
9-14	<p>2.1 Explain general principles of simple bending.</p> <p>2.2 Determine the position of neutral axis.</p> <p>2.3 Calculate moments of inertia.</p> <p>2.4 Determine bending stresses in Beam sections.</p> <p>2.5 Calculate combined bending and direct stress.</p> <p>2.6 Determine shear stresses in rectangular Beam sections.</p> <p>2.7 Determine moment of inertia about an axis, maximum and minimum values of inertia about the principal axis.</p>	<ul style="list-style-type: none"> • State/mention the principles of simple bending • Show the students how to determine the position of Neutral axis of a body • Show the students how to calculate moments of Inertia • Show the students how to determine bending stresses in Beam sections • Demonstrate to the students how to calculate combined bending and direct stress. • Show the students how to determine shear stresses in rectangular Beam sections • Show the students how to determine moment of maximum and minimum values of moment of inertia about the principal axis. 	Chalk Board
<p>Assessment: Coursework: 20% Course test: 20% Practical 0% Examination 60%</p> <p>Competency: The students should be able to analyse simple statically determinate structures.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Durka, F. "Structural Mechanics: 2. Optimum Structural design: theory application" 			

Introduction to Structures Design and Detailing

COURSE: Introduction to Structures Design and Detailing		Course Code: BLD 202	Contact Hours:1-0-0
COURSE SPECIFICATION: Theoretical content.			
General Objective 1.0: Know how to determine reactions, Bending Moments, shear force values.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1 - 4	1.1 Define the terms strut 1.2 Illustrate the end fixture of columns. 1.3 Determine effective column length and slenderness ratio. 1.4 Determine the strength of columns. 1.5 Determine Euler crippling load on different supports.	• Lecture give examples	• Chalk Board
General Objective 2.0: Understand the nature of sudden failure, buckled shapes and effective lengths.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5 - 7	2.1 Demonstrate elastic buckling modes with different conditions. 2.2 Illustrate the buckled shapes and effective lengths. 2.3 Explain how to avoid buckling in struts.	-do-	-do-
General Objective 3.0: Understand Framed Structures.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
8 - 9	3.1 Compare graphical and analytical methods of determination of forces in members of roof trusses and statically determinate plane frames. 3.2 Compute the forces in a given framed structure.	-do-	-do-
General Objective 4.0: Understand the Design of Simple Structural Elements.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
10 - 11	4.1 Determine loads to be carried by slabs and beams. 4.2 Design simple rectangular beam by the load factor of elastic method. 4.3 Determine moments of resistance of TEE and ELL beams with tensile reinforcement only using the load factor or elastic factor method.	• Lecture give examples. • Make students carry out good details.	• Chalkboard.

COURSE: Introduction to Structures Design and Detailing		Course Code: BLD 202	Contact Hours:1-0-0
COURSE SPECIFICATION: Theoretical content.			
13 - 14	<p>4.4 Illustrate the various types of concrete and reinforced concrete foundations.</p> <p>4.5 Explain the general principles governing the design of foundations.</p> <p>4.6 Design load bearing walls and isolated footings.</p> <p>4.7 Explain the elementary principles of bolted, riveted and welded joints.</p>		
1 - 15	<p>a. Determine Euler crippling load on different supports.</p> <p>b. Demonstrate elastic buckling modes with different conditions.</p> <p>c. Carry out graphical and analytical methods of determination of forces in members of roof trusses and statically determinate plane frames.</p> <p>d. Design simple rectangular beam by the load factor or elastic method.</p> <p>e. Design load bearing walls and isolated footings.</p>	<ul style="list-style-type: none"> • Technologist to ensure practical work are carried out. <li style="text-align: center;">- do - • Make students carry out good details. 	<ul style="list-style-type: none"> • Strut buckling of strut apparatus. • Model frame work apparatus. • Chalkboard
<p>Assessment: Coursework: 20% Course test: 20% Practical 20% Examination 40%</p> <p>Competency: The students should be familiar with design of simple structural elements..</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. Lerchroch. V.V. "Reinforced Concrete Structures design a Systematic guide" 2. Oladipo I.O. "Fundamentals of the design concrete Structure" 			

Computer Courses

Introduction to Computing

Course: Introduction to Computing		Course Code: ICT 101	Contact Hours: 2-1 - 2
<p>Course Objectives: To give the students the skill needed to appreciate the use of computers and specialist software Packages in a competent manner, within their own engineering speciality. The learning methodology should be student centred, with the student using various available packages in order to be competent when using them. The use of student workbooks or guided learning materials is recommended.</p>			
<p>Key Objectives: The outcome from the learning process should be that the student would be able to do the following.</p>			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1	1.1 Define what is meant by a computer. 1.2 Know the history of computer development (briefly) 1.3 State the uses of computers and understand the impact of the PC on computer technology. 1.4 Differentiate between hardware and software 1.5 Understand the input-process-output algorithm (hardware) <ol style="list-style-type: none"> Central processor Input mechanisms Output mechanisms 	<ul style="list-style-type: none"> Define what is meant by a Computer. Teach the history of Computers developments. (Briefly) Teach the uses of computers and the impact of PC on the society: home, office, banks etc. 	<ul style="list-style-type: none"> Maximum of 4 students to 1 computer Maximum of 4 computers to a printer except when a Net work is in use. 1 Ream of A4 papers to 10 students. - 4 Ink cartridge per printer per semester.
2	Know how data is stored <ol style="list-style-type: none"> RAM ROM Fixed discs Removable discs Understand the concept of an operating system <ol style="list-style-type: none"> PC-DOS/MS-DOS Windows Linux Unix 	<ul style="list-style-type: none"> Explain the need for data storage. Dismantle a computer system and show the students the RAM card, the Hard Disk and the Processors. Explain the concept of an operating system. 	

Course: Introduction to Computing		Course Code: ICT 101	Contact Hours: 2-1 - 2
Week	Specific Learning Outcome	Teacher's Activities	Resources
3	<p>Access computers correctly through Windows operating system.</p> <ol style="list-style-type: none"> Open/Close a window Program Manager Button bars/scroll bars/menu bars Moving from one window to another 	<ul style="list-style-type: none"> Discuss the advantage of the Windows Operating System. Explain the windows menu and tools. <p>Each student must be given an opportunity to start a computer, open/close the window operating system, understand the program manager and move around in the windows environment.</p>	
4	<ol style="list-style-type: none"> Understand file management and how to manage files Creating a file and folder Manipulating files (moving, copying, saving, deleting) Print manager 	<ul style="list-style-type: none"> Explain the process of creating a file, manipulating the file and use of the print manager. 	
	<p>Understand the concept of a software package</p> <ol style="list-style-type: none"> MS Office Lotus Smartsuite MS Encarta 	<ul style="list-style-type: none"> Load MS Office with the students and explain the various packages that make up MS Office. Load MS Encarta and discuss its use with the students. 	
5 - 6	<p>Demonstrate ability in the competent use of a word-processing package such as MS Word (or equivalent standard)</p> <ol style="list-style-type: none"> Entering text Formatting text (boldening, font size, italicising) Creating and Saving text files Editing and moving text Importing objects 	<ul style="list-style-type: none"> Demonstrate the installation of MS Words. Identify the different features of the software. Ask students to type a short document and save it. Ask students to edit a document and carry out a spelling check. Demonstrate the use of tables. 	

Course: Introduction to Computing		Course Code: ICT 101	Contact Hours: 2-1 - 2
Week	Specific Learning Outcome	Teacher's Activities	Resources
5 – 6	<ul style="list-style-type: none"> f. Spelling and Grammar Checking g. Creating and manipulating tables, text boxes, equations h. Printing 	<ul style="list-style-type: none"> • Demonstrate the installation of MS Words. • Identify the different features of the software. • Ask students to type a short document and save it. Ask students to edit a document and carry out a spelling check. • Demonstrate the use of tables. 	
7 - 8	<p>Demonstrate ability in the competent use of a graphics package such as Corel Draw (or equivalent standard)</p> <ul style="list-style-type: none"> a. Drawing tools b. Text as graphics c. Creating and saving image files d. Editing and moving images e. Importing and exporting graphics f. Windows 'Clipboard' facility g. Creating and manipulating images (re-sizing etc) h. Image file standard (JPEG, PCX, GIF etc) i. Printing 	<ul style="list-style-type: none"> • Load Corel Draw. • Explain features of the soft wares. • Demonstrate the creating and saving of images. • Edit the images saved. • Export the graphics to other packages • Demonstrate the manipulation (re-sizing) of images. 	
9 - 11	<p>Demonstrate ability in the competent use of a spreadsheet package such as MS Excel (or equivalent standard).</p> <ul style="list-style-type: none"> a. Setting up the worksheet b. Entering data c. Formatting data (decimal places, alpha-numeric) 	<ul style="list-style-type: none"> • Load MS Excel. • Explain features of the software. • Create a worksheet and edit it. • Demonstrate how to format a workshop. 	

Course: Introduction to Computing		Course Code: ICT 101	Contact Hours: 2-1 - 2
Week	Specific Learning Outcome	Teacher's Activities	Resources
9 - 11	<ul style="list-style-type: none"> d. Creating and saving worksheets e. Creating a formula in cells f. Importing objects g. Exporting the worksheet h. Creating and manipulating graphical representations of data i. Printing 	<ul style="list-style-type: none"> • Load MS Excel. • Explain features of the software. • Create a worksheet and edit it. • Demonstrate how to format a workshop. 	
12-13	<p>Demonstrate ability in the competent use of a database package such as MS Access (or equivalent standard)</p> <ul style="list-style-type: none"> a. Drawing tools b. Text as graphics c. Creating & saving image files d. Editing & moving images e. Importing & exporting graphics f. Windows 'Clipboard' facility g. Creating & manipulating images (re-sizing etc) h. Image file standards (JPEG, PCX, GIF etc) i. Printing 	<ul style="list-style-type: none"> • Load MS Access. • Explain the features and working of the software. • Use students record as example and enter the records in the structure query modify and produce typical report. • Show how to index and sort files in alphabetical order. 	

Course: Introduction to Computing		Course Code: ICT 101	Contact Hours: 2-1 - 2
Week	Specific Learning Outcome	Teacher's Activities	Resources
14-15	<p>Use the Internet to retrieve information.</p> <p>a. World Wide Web (WWW)</p> <p>b. Download information</p> <p>c. Paste retrieved information into an appropriate application</p> <p>d. Use e-mail to send and receive messages.</p> <p>e. National and international e-mail</p> <p>f. E-mail attachments (sending & receiving)</p>	<ul style="list-style-type: none"> • Show students how to look on to the Internet. • Write and send an email. • Surf the net. 	
<p>Assessment: Coursework 20%; Course test 20%; Practical 10%; Examination 50%.</p> <p>Competency: The student should be expose to understand basic computer programming.</p> <p>Reference: Chapra, S.C. and Canale, R.P. "Introduction to Computing for Civil Engines, Mcgrew hil, 1994 Press, W.H., Teukolsky, S.A., Vetterling, W.T. and Fannery, B.P. "Numerical recipes". Cambridge Univ. Press, 1993.</p>			

Introduction to Programming Concepts using Q-Basic

Course: Introduction to Programming Concepts using Q-Basic		Course Code: ICT 102	Contact Hours 0/0/2 Practical simultaneously
Course Specification: Theoretical Content			
General Objective 1.0: To enable student to develop basic programming skills			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 2	Understand Computer Programming Define programming Define Algorithm Outline basic steps in developing algorithm Write simple algorithm to solve simple problem Explain Flowchart Identify Flowchart symbols Draw Flowchart of the algorithm in 1.2.2	<ul style="list-style-type: none"> • Define program and give examples • Give real- life example relating to the student's tradee.g Building process, Chair making process • Draw different Flow chart symbols and explain each • List different programming languages • Give the features of HLL and LLL • Give definitions of translators 	Charts
General Objective 2.0: Implement programming concept using BASIC			
Week	Specific Learning Outcome	Teachers Activities	Resources
3	2.1 State BASIC character set 2.2 State BASIC variable names 2.3 Describe variable name formation 2.4 Form variable names 2.5 Define identifiers 2.6 Classify identifiers e.g string, numeric, real etc	<ul style="list-style-type: none"> • List the basic character • Set e.g. Alphabets, digits, special character • Explain how variable names are formed • Differentiate between identifiers and variable names 	
General Objective 3.0: Define Q-BASIC expressions			
Week	Specific Learning Outcome	Teachers Activities	Resources
4	3.1 Explain arithmetic expressions 3.2 Explain relational expressions 3.3 Explain logical expressions	<ul style="list-style-type: none"> • Give examples of arithmetic, relational and logical expressions 	

Course: Introduction to Programming Concepts using Q-Basic		Course Code: ICT 102	Contact Hours 0/0/2 Practical simultaneously
Course Specification: Theoretical Content			
General Objective 4.0: Q-BASIC Functions			
Week	Specific Learning Outcome	Teachers Activities	Resources
5	4.1 Explain Functions 4.2 Explain in-built functions 4.4 Explain user defined functions	• Give examples of in-built and user defined functions	
General Objective 5.0: Q-BASIC syntax			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	5.1 Explain READ/ DATA Statements 5.2 Explain INPUT Statements 5.3 Explain REMARK Statements 5.4 Explain PRINT Statements	• Illustrate the use of the different statements with examples	
General Objective 6.0: Introduction to Q-BASIC Environment			
Week	Specific Learning Outcome	Teachers Activities	Resources
7-8	6.1 Explain how to enter the Q-BASIC Editor 6.2 Explain how to key in programs 6.3 Explain how to save Q-BASIC programs 6.4 Explain how to debug Q-BASIC program	• Get student to switch on to the Q-BASIC Environment • Show the student how to enter the Q-BASIC Environment • Open the Editor • Instruct the student to SAVE, RUN and DEBUG the program • PRINT results	• PCs, Q-BASIC Software • Printer

Course: Introduction to Programming Concepts using Q-Basic		Course Code: ICT 102	Contact Hours 0/0/2 Practical simultaneously
Course Specification: Theoretical Content			
General Objective 7.0: Simple programs			
Week	Specific Learning Outcome	Teachers Activities	Resources
9-14	7.1 Write Simple programs 7.2 Run the programs 7.3 Print program result 7.4 Explain Control Statements 7.5 Explain Branching statements 7.6 Explain IF-THEN-ELSE 7.7 Explain FOR-NEXT	<ul style="list-style-type: none"> Write program to illustrate the use of IF-THEN-ELSE and FOR-NEXT Give the student programming projects embracing all concept that have been taught in their areas of trade 	PCs, Q-BASIC Software Printer
15	Write simple programs using the different statement and constructs		
<p>Assessment: Coursework 20%; Course test 20%; Practical 10%; Examination 50%.</p> <p>Competency: The student should be able to use Qbasic to write programs for Civil Engineering works.</p>			

Drawing Courses

Technical Drawing

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Theoretical Content			
General Objective 1.0: Know the use and care of the different drawing instruments, equipments and materials.			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	1.1 Identify the different types of drawing instruments, equipments and materials. 1.2 Outline the various instruments, equipments and materials. 1.3 State the precautions necessary to preserve the items in 1.1 above. 1.4 Use each of the item in 1.1 above 1.5 Maintain the various instrument and equipment.	<ul style="list-style-type: none"> • Demonstrate the uses of various drawing instruments, equipment and materials. • *Show how they should be maintained. 	<ul style="list-style-type: none"> • Drawing instruments, equipments and materials such as Ruler, setsquares, T- squares, pencils drawing paper etc. • Chalk board.
General Objective 2.0: Understand the essentials in graphical communication			
Week	Specific Learning Outcome	Teachers Activities	Resources
2	2.1 Explain graphics and the different types of graphical presentations. 2.2 Illustrate the various conventional representations in graphical production of construction lines, finished lines, hidden and overhead details, projects, center lines, break lines, dimensioning of plans, elevations and sections of objects.	<ul style="list-style-type: none"> • Show representation on the chalkboard. 	<ul style="list-style-type: none"> • Chalk board.
3 - 5	2.3 Layout drawing sheets with the following. <ul style="list-style-type: none"> a. Margin b. Title block etc. 2.4 State the various standards of drawing sheets. 2.5 Print letters and figures of various forms and characters. 2.6 Illustrate conventional signs and symbols. 2.7 Layout a given set of drawings on a given sheet using the conventional signs, symbols and appropriate lettering characters.	<ul style="list-style-type: none"> • Illustrate on the chalk board <p style="text-align: center;">-do- -do- -do-</p>	<ul style="list-style-type: none"> • Chalkboard • Drawing sheets of various standards. <p style="text-align: center;">-do- -do- -do-</p>

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Theoretical Content			
General Objective 3.0: Know the Construction of simple geometric figures and shapes.			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	<p>3.1 Explain the purpose of geometrical construction in drawing.</p> <p>3.2 Construct parallel and perpendicular lines.</p> <p>3.3 Construct and bisect lines, angles and areas.</p> <p>3.4 Divide a straight line into given number of equal parts.</p>	<ul style="list-style-type: none"> Show students how to construct simple geometrical figures and shapes. 	-do-
7	<p>3.5 Identify polygons (regular or irregular).</p> <p>3.6 Construct regular polygons with:</p> <ol style="list-style-type: none"> N sides in a given circle. A given side length and of N side on a straight line. 	<ul style="list-style-type: none"> Show students how to construct polygons. 	-do-
8	<p>3.7 Define a circle.</p> <p>3.8 Explain the properties of a circle, e.g. radius, diameter, normal tangent, circumference etc.</p> <p>3.9 Carry out simple geometrical constructions on circles e.g.</p> <ol style="list-style-type: none"> the diameter of a circle given the circumference the circumference of a circle of a given diameter a circle to pass through 3 points a circle to pass through 2 points and touch a given line a circle to touch a given smaller circle and a given line Tangents to circles at various points. An arc of know radius, tangent to two lines at an angle of less than and more than 90° An arc externally tangent to two circles Inscribing and exscribing circles 	<ul style="list-style-type: none"> Show the different geometrical constructions on circles. 	-do-

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Theoretical Content			
General Objective 3.0: Know the Construction of simple geometric figures and shapes.			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	3.10 Define an ellipse. 3.11 Construct an ellipse by using: a) Trammel method. b) Concentric circle method.	• Construct and ellipse using the methods listed.	• Chalk board • Trammel.
General Objective 4.0: Know the Construction of isometric and obliques drawings and projections.			
Week	Specific Learning Outcome	Teachers Activities	Resources
11-12	4.1 Explain isometric and obliques projections 4.2 Draw a square in isometric and oblique forms 4.3 Draw a circle in isometric and oblique forms 4.4 Draw an ellipse in isometric and oblique forms 4.5 Draw a polygon with a minimum of eight sides in isometric and oblique forms. 4.6 Dimension holes, circles, arcs and angles correctly in isometric and obliques drawings 4.7 Use appropriate conventional symbols and abbreviations	-do-	-do-
General Objective 5.0: Understand the Principles of orthographic projections			
Week	Specific Learning Outcome	Teachers Activities	Resources
13	5.1 Explain the principles of orthographic projections 5.2 Illustrate the principle planes of projection: a. vertical plane b. horizontal plane	-do-	-do-
14	5.3 Explain why the first and third angle are used and the second and fourth angle are not used. 5.4 Project views of three-dimensional objects on to the basic planes of projection in both first and third angle to obtain: a. the front view or elevation b. the top view or plan		

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Theoretical Content			
General Objective 6.0: Understand the Intersections of regular solids.			
Week	Specific Learning Outcome	Teachers Activities	Resources
15	<p>6.1 Explain interpenetration or intersections of solids</p> <p>6.2 Draw the lines of intersections of the following regular solids and planes in both first and third angles:</p> <ul style="list-style-type: none"> a. Two dissimilar square prisons meeting at right angles. b. Two dissimilar square prisons meeting at an angle. c. a hexagonal prison meeting square prison at right angles. d. Two dissimilar cylinders meeting at right angles. e. Two dissimilar cylinders meeting at an angle. f. Two dissimilar cylinders meeting at right angle, their centers not being in the same vertical plane. 	- do -	- do -
<p>Assessment: Coursework: 20% Course test: 20% Practical: 20% Examination: 40%</p> <p>Competency: The students should be conversant with the fundamentals of technical drawing and their applications in engineering and technology.</p> <p>Reference:</p> <ul style="list-style-type: none"> 1. M. G. Swah etal "Building Drawing" 2. Ceck Handisyee "Everyday Details" 			

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Practical Content			
Week	Specific Learning Outcome	Teachers Activities	Resources
1-5	a. Layout drawing sheets with the following. b. Margin c. Title block etc. d. Print letters and figures of various forms and characters. e. Layout a given set of drawings on a given sheet using the conventional signs, symbols and appropriate lettering characters.	<ul style="list-style-type: none"> • Illustrate on the chalk board • Demonstrate using examples. <p style="text-align: center;">-do-</p>	<ul style="list-style-type: none"> • Chalkboard • Drawing sheets of various standards. • Chalkboard. <p style="text-align: center;">- do -</p>
6	a. Construct parallel and perpendicular lines. b. Construct and bisect lines, angles and areas. c. Divide a straight line into given number of equal parts.	<ul style="list-style-type: none"> • Show students how to construct simple geometrical figures and shapes. 	- do -
7	Construct regular polygons with: N sides in a given circle. A given side length and of N side on a straight line.	<ul style="list-style-type: none"> • Show students how to construct polygons. 	-do-
8	a. Carry out simple geometrical constructions on circles e.g. b. the diameter of a circle given the circumference. c. the circumference of a circle of a given diameter. d. a circle to pass through 3 points. e. a circle compass through 2 points and touch a given line f. a circle to touch a given smaller circle and a given line g. Tangents to circles at various points. h. An arc of know radius, tangent to two lines at an angle of less than and more than 90oi. An arc externally tangent to two circles. j. Inscribing and exscribing circles.	<ul style="list-style-type: none"> • Show the different geometrical constructions on circles. 	-do-

Course: Building Technology ND		Course Code: BLD 107	Contact Hours: 1-0-3
Course Technical Drawing Course Specification: Practical Content			
Week	Specific Learning Outcome	Teachers Activities	Resources
9 11	a. Construct an ellipse by using: b. Trammel method. c. Concentric circle method. d. Construct plane scales, diagonal scales and scale cut using appropriate instruments.	<ul style="list-style-type: none"> • Construct and ellipse using the methods listed. • Demonstrate with examples. 	<ul style="list-style-type: none"> • Chalk board • Trammel. • Drawing instruments chalkboard.
12	a. Draw a square in isometric and oblique forms b. Draw a circle in isometric and oblique forms c. Draw an ellipse in isometric and oblique forms d. Draw a polygon with a minimum of eight sides in isometric and oblique forms. e. Dimension holes, circles, arcs and angles correctly in isometric and oblique drawings.	-do-	-do-
14	a. Project views of three-dimensional objects on to the basic planes of projection in both first and third angle to obtain: b. the front view or elevation c. the top view or plan	-do-	-do-
15	a. Draw the lines of intersections of the following regular solids and planes in both first and third angles: b. Two dissimilar square prisms meeting at right angles. c. Two dissimilar square prisms meeting at an angle.	-do-	-do-
	a. a hexagonal prism meeting square prism at right angles. b. Two dissimilar cylinders meeting at right angles. c. Two dissimilar cylinders meeting at an angle. d. Two dissimilar cylinders meeting at right angle, their centers not being in the same vertical plane.		
Assessment: Coursework: 10% Course test: 10% Practical: 40% Examination: 40%			

Basic Principles of ARCH Design and Drawing

Course: Basic Principles of ARCH Design and Drawing ND		Course Code: BLD 110	Contact Hours: 1-0-2
Course Specification: Theoretical Content			
General Objective 1.0: Know how to code and reproduce Drawing.			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 2	1.1 Explain the various systems of coding drawings 1.2 Illustrate how to layout drawings and present them 1.3 Enumerate the various equipment used in graphical reproduction e.g. printing machine, scanning machine, photocopying machine, computer, plotter. 1.4 Use the equipment in 1.3 above. 1.5 Maintain the equipment in 1.3 above.	<ul style="list-style-type: none"> • Demonstrate and present layout drawings. • Show the students graphical reproduction equipment. • Demonstrate use of the above equipment • Demonstrate maintenance vis-à-vis maintenance workshop and technical sales shops 	<ul style="list-style-type: none"> • Chalk Board, Design studio, • Printing machines, Scanning machines, Photocopying machine, Computer machine, Plotter etc. • Chalk Board, Design studio
General Objective 2.0: Understand the general elements of design with Respect to space requirements of different functions In residential building.			
Week	Specific Learning Outcome	Teachers Activities	Resources
3 - 6	2.1 Enumerate the various equipment used in graphical drawing 2.2 Derive the human scale. 2.3 Work out the scale needed for human movement. 2.4 Explain the relationship between form and function in the internal arrangement for a living space, 2.5 Derive the space requirement for domestic furniture, fixture, corridor etc. 2.6 Arrange furniture, fixture, equipment of common usage in a residential building. 2.7 Design kitchen, toilet, living room etc. as a unit. 2.8 Apply proportion as an element of design. 2.9 Select overall dimensions.	<ul style="list-style-type: none"> • Mention and highlight relevant Information and Computer Technology (ICT) equipment. • Demonstrate typical drawing examples and models. • Show approved working drawings. 	<ul style="list-style-type: none"> • Chalk board, Design studio, Printing machine, Scanning machine, Photocopying machine, Computer machine, Approved working drawings, Architect's data

Course: Basic Principles of ARCH Design and Drawing ND		Course Code: BLD 110	Contact Hours: 1-0-2
Course Specification: Theoretical Content			
General Objective 3.0: Understand draughting and produce working Drawing of a simple residential building			
Week	Specific Learning Outcome	Teachers Activities	Resources
7-10	3.1 Choose size of drawing sheets 3.2 Choose the appropriate scales for drawing 3.3 Draught the plan of a given building design using a given set of drawings as a guide. 3.4 Project the elevations and sections 3.5 Draught the doors and windows schedules, finishing Drawings, sanitary drawings and site plan etc 3.6 Trace in ink the drawings draughted in 2.3, 2.4 and 2.5 above. 3.7 Stencil with annotation the traced drawing 3.8 Code the finished drawings in the conventional order. 3.9 Apply Information and Computer Technology equipment for designs.	<ul style="list-style-type: none"> • Demonstrate with existing approved working drawing. • Supervise students' drawings on card board sheets • Supervise students' drawings on traced sheets. • Demonstrate use of Computer to produce working drawing 	Chalk board, Design studio, Computer machine, Printer plotter and plan printing machine, Chalk board, Design studio.
General Objective 4.0: Know the basic materials and tools used for artistic Production and undertake simple pencil sketching			
Week	Specific Learning Outcome	Teachers Activities	Resources
11 - 15	4.1 Explain the role of art in communication 4.2 Enumerate the basic tools used in graphic art and their function. 4.3 List the various materials used in graphic art. 4.4 Illustrate how the materials in 3.3 above are used for graphical production. 4.5 Maintain the tools enumerated in 3.2 above.	<ul style="list-style-type: none"> • Demonstrate application of graphic art tools. • Demonstrate maintenance processes • Apply the various grades of pencils. • Show how to make shadow cast • Engage students to produce drawings. 	<ul style="list-style-type: none"> • Chalk board, • Design Studio.

Course: Basic Principles of ARCH Design and Drawing ND	Course Code: BLD 110	Contact Hours: 1-0-2
Course Specification: Theoretical Content		
11 - 15	<p>4.6 State the various grades of pencils and factors affecting their choice for sketching.</p> <p>4.7 Sketch various planner shapes and three dimensional shapes</p> <p>4.8 Explain the principles of shadow casting.</p> <p>4.9 Use the cross-hatching techniques to produce the objects in 3.7</p>	<ul style="list-style-type: none"> • Demonstrate application of graphic art tools. • Demonstrate maintenance processes • Apply the various grades of pencils. • Show how to make shadow cast • Engage students to produce drawings. <ul style="list-style-type: none"> • Chalk board, • Design Studio.
<p>Assessment: Coursework: 20% Course test: 20% Practical: 20% Examination: 40%</p> <p>Competency: The students should be able to produce working drawings of residential building manually and using computer.</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. Praser Reckie "Draughtmanship" 2. Robert C. MC Hige" Working Drawing Hand book" 		

Course: Basic Principles of ARCH Design and Drawing ND		Course Code: BLD 110	Contact Hours: 1-0-2
Course Specification: Practical Content			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 2	1. Use graphical reproduction equipment. 2. Maintain the equipment.	• Demonstrate use of equipment.	• Chalk Board, Design studio, • Printing machines, Scanning machines, Photocopying machine, Computer machine, Plotter etc. • Chalk Board, Design studio.
3 - 6	3. Design kitchen, toilet, living room etc. as a unit.	• Guide Students in their drawings works.	• Chalk Board, Design studio • Printing machine, Scanning machine, Photocopying machine, Computer machine, Approved working drawings, Architect's data.
7 - 10	4. Draught the plan of a given building design using a given set of drawings as a guide using appropriate scales. 5. Draught the doors and windows schedules, finishing 6. Drawings, sanitary drawings and site plan etc 7. Trace in ink the drawings draughted in 2.3, 2.4 and 2.5 above. 8. Sketch various planner shapes and three dimensional shapes. 9. Use the cross-hatching techniques to produce the objects in 3.7.	• Supervise students' drawings on card board sheets. • Demonstrate application of graphic art tools.	• Chalk board, Design studio, Computer machine, • Printer plotter and plan printing machine, • Chalk board, Design studio.

Law and Management Courses

Principles of Economics

Course: Principles of Economics		Course Code: GNS 222	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 1.0: Understand the existence of scarcity of resources and recognize the need to allocate resources between alternative uses			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1	1.1 Identify resources in terms of factors of production i.e land, labour and capital	Define and explain the terminologies	Chalkboard, classroom, chalk, Duster
2	1.2 Evaluate cost in terms of the marginal foregone alternative using transformation curve analysis	Use environment to cite real examples.	
	1.3 Explain approximate cost from statistical evidence using production	Use questions and answers techniques.	
	1.4 Calculate the effect on the production possibility curve of changing levels of influencing economic growth from statistical data provided for analysis		
General Objective 2.0: Understand the Forces of demand and supply operating in the market economy to determine prices			
Week	Specific Learning Outcome:	Teachers Activities	Resources
3	2.1 Define the functions of demand in terms of income, price of substitutes, price of complements and taste.	Give more definitions of terminologies	Chalkboard, chalk, duster, calculator
4	2.2 Construct a graph to indicate a demand curve from statistical data provided for examination	Give the students more assignments	
5	2.3 Define elastic, inelastic and unitary price elasticity of demand for good and services	Use relevant examples in the locality to further explain.	
6	2.4 Define the concept of supply		
	2.5 Construct a graph to indicate a supply curve from statistical data provided for examination		
	2.6 Calculate price equilibrium from statistical data involving demand and supply analysis		
	2.7 Calculate changes in price equilibrium from statistical data involving changes in the conditions of demand and supply		

Course: Principles of Economics		Course Code: GNS 222	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 2.0: Understand the Forces of demand and supply operating in the market economy to determine prices			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	2.8 Calculate the effect of subsidy from the statistical data provided for examination	Give more definitions of terminologies Give the students more assignments Use relevant examples in the locality to further explain.	Chalkboard, chalk, duster, calculator
General Objective 3.0: Know the production equilibrium of firms in the economy			
Week	Specific Learning Outcome:	Teachers Activities	Resources
7 8	3.1 Describe the criteria underlying the nation of perfect competition, imperfect competition and monopoly 3.2 Calculate the production equilibrium of firm from statistical data provided 3.3 Calculate the breakeven point of firm from statistical data provided	Explain the concept of competition, monopoly, etc. Give worked examples. Give more assignments to students.	
General Objective 4.0: Appreciate the stages of Economic growth with reference to the Nigerian Economy			
Week	Specific Learning Outcome:	Teachers Activities	Resources
9 - 11	4.1 Describe the measurement and uses of national income and products 4.2 Explain main reason for differences in per capital national income 4.3 Describe elementary theory of National Income determination	Ditto	

Course: Principles of Economics		Course Code: GNS 222	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 5.0: Appreciate the economics of land as a resources and development of land by developers			
Week	Specific Learning Outcome:	Teachers Activities	Resources
12 - 15	5.1 Define in legal terms "land" as a factor of production 5.2 Evaluate the demand for land by developers 5.3 Explain the aims of public and private developers 5.4 Describe the factors determining the choice and acquisition of site for development	Highlight the importance of land in comparison to other factors of production.	
<p>Assessment: Coursework - 20%; Course Test - 20%; Practical -0%; Examination -60%</p> <p>Competency: The student should be able to know basic economics of production.</p> <p>Reference: Ivor H. Seeley Macmillan "Building Economics 4th Edition"; Stephen L.G. "Construction Economics" (in Introduction).</p>			

Principles of Accounts

Course: Principles of Accounts		Course Code: BLD 108	Contact Hours: 1-1-0
Course Specification: Theoretical Content			
General Objective 1.0: Know the recording of transactions in the books of accounts			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
1	1.1 Describe the double entry systems of recording transactions. 1.2 Identify the debit and credit sides of an account entry. 1.3 Prepare double entry recording of transactions. 1.3 Explain the terms and uses of journal, ledger, cash book, etc.	Use real samples to explain. Use questions and answers techniques.	Chalkboard Ledger Calculator Accounting machine
General Objective 2.0: Understand the use of General ledger.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
2	2.1 Explain what a ledger is. 2.2 Illustrate the use of a ledger. 2.3 Describe a ledger for information.	Ditto	- do -
General Objective 3.0: Know how to extract a trial balance.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
3 - 4	3.1 Explain the term trial balance. 3.2 Explain the principle of trial balancing. 3.3 Prepare a final balance.	Give more worked examples. Give assignments to students.	- do -
General Objective 4.0: Know how to prepare the final Account of a Sole trader.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
5 - 7	4.1 Explain the term Final Account. 4.2 List the components of a Final Account. 4.3 Prepare a Final Account for a Sole trader.	Ditto	- do -
General Objective 5.0: Know how to prepare accounts for a Partnership and/or a Sole trader			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
8	5.1 Prepare the draft account of a partnership. 5.2 Prepare the partnership current accounts and capital accounts.	Ditto	- do -
9	5.3 Prepare the appropriation account of a partnership. 5.4 Prepare profit and loss appropriation account of partnership and/or Sole traders business.		- do -

Course: Principles of Accounts		Course Code: BLD 108	Contact Hours: 1-1-0
Course Specification: Theoretical Content			
General Objective 5.0: Know how to prepare accounts for a Partnership and/or a Sole trader			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
10	5.5 Prepare a Balance sheet for a partnership and/or Sole trader's business. 5.6 Prepare the Bank reconciliatory statements for Sole trader and partnership account.		- do -
General Objective 6.0: Understand the preparation of contract accounts.			
Week	Specific Learning Outcomes:	Teachers Activities	Resources
11-15	6.1 Explain what an Architect's Certificate means. 6.2 State the uses and importance of Architects Certificate in the execution of a contract. 6.3 Explain how to treat sub-contract work in the accounts. 6.4 State the treatment of plant and machinery purchases for a contract in the account. 6.4 Describe how to apportion overhead to a particular contract. 6.5 Prepare contract accounts for individual contracts. 6.6 Explain how profit on an uncompleted contract is to be treated.	Describe the terms as herein applied. Give more worked examples.	
<p>Assessment: Coursework - 20%; Course Test - 20%; Practical - 0%; Examination - 60%.</p> <p>Competency: The student should be able to prepare the final account for a small business enterprise.</p> <p>References:</p> <ol style="list-style-type: none"> 1. A.E. Jenning "Accounting and Finance for Building and Surveying" 2. Alan E. Turner "Building Procurement" Macmillan 			

Principles of Law and Building Contracts

Course: Principles of Law and Building Contracts		Course Code: BLD 211	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 1.0: Know the branches and sources of Law and the various schools of Law			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	1.1 State and describe schools of Law i.e. i. Analytical school. ii. Historical school. iii. Sociological school. iv. Maximum theory of law. v. Natural law school 1.2 State sources of Law i.e. statutory, common law. 1.3 State branches of law i.e. criminal, civil and tort.	Explain the different origins. Use question and answer techniques. Give examples from stated cases.	Chalkboard, classroom Ditto
2			
General Objective 2.0: Understand the legislation process and power separation			
Week	Specific Learning Outcome	Teachers Activities	Resources
3	2.1 Explain the doctrine of separation of powers, its advantages and disadvantages	Use question and answer technique	Ditto
4	2.2 State the functions of different arms of government	Use present arrangement to illustrate	
General Objective 3.0: Know the general principles of constitutional and administrative Law			
Week	Specific Learning Outcome	Teachers Activities	Resources
5 - 7	3.1 Define the term "constitution" 3.2 Describe and distinguish the different kinds of constitutions i.e 3.3 Written as opposed to unwritten constitution 3.4 Flexible as opposed to rigid constitutions 3.5 Federal as opposed to unitary constitutions 3.6 Describe and distinguish between: 3.7 Presidential system of government 3.8 Parliamentary (cabinet, west minister system of government)	Give examples to illustrate the term Give exercises and review assignment with students	Ditto

Course: Principles of Law and Building Contracts		Course Code: BLD 211	Contact Hours: 2-0-0
Course Specification: Theoretical Content			
General Objective 4.0 Understand the statutory Acts, Edicts, Decrees, Bye-Laws etc.			
Week	Specific Learning Outcome	Teachers Activities	Resources
8 - 10	4.1 Define the following: <ul style="list-style-type: none"> i. Statutory act ii. Decrees iii. Edicts iv. Bye-laws v. Regulations 4.2 Explain the importance of each of them, their promulgation process and their jurisdiction.		
General Objective 5.0: Understand the simple Building regulations and planning Laws.			
Week	Specific Learning Outcome	Teachers Activities	Resources
11 -15	5.1 State the various Acts and statutes applicable to the erection of buildings. 5.2 Explain the sources of plans and Hierarchy of plans.	Give examples to illustrate. Use life projects to illustrate different plans.	Ditto
Assessment: Coursework - 20%; Course Test - 20%; Practical - 0%; Examination - 60% Competency: The student should be able to have the basic knowledge of law and building regulations. References: <ol style="list-style-type: none"> 1. I.E. Sagay "Nigerian Law of Control" Spectrum Law series 2. Kodilinye and Aluko "Nigerian Law of Torts" Spectrum Law series 			

Entrepreneurship Development I

Course: Entrepreneurship Development I		Course Code: SDV 210	Contact Hours: 2 - 0 - 0
Course Specification: Theoretical Content			
General Objective 1.0: Understand the basic concept of entrepreneurship			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	1.1 Define entrepreneurship, entrepreneur, small business and self-employment. 1.2 State the entrepreneurship philosophy identify entrepreneurial characteristics. 1.3 Identify entrepreneurial characteristics. 1.4 Define development enterprise.	<ul style="list-style-type: none"> Lecture and site examples of each. 	<ul style="list-style-type: none"> Chalkboard
General Objective 2.0: Understand the historical perspective of entrepreneurship Development			
Week	Specific Learning Outcome	Teachers Activities	Resources
2	2.1 Historical perspective. 2.2 Trace the origin of entrepreneurship. 2.3 Explain organizational structure. 2.4 Explain the role of an entrepreneur. 2.5 Explain the reasons for business failure.	<ul style="list-style-type: none"> Trace the historical evolution of business enterprise citing example Highlight the reasons for their failure/success. 	<ul style="list-style-type: none"> Chalkboard
General Objective 3.0: Know how to plan a business enterprise/project.			
Week	Specific Learning Outcome	Teachers Activities	Resources
3 - 5	3.1 Define the concepts: planning, business enterprise and project. 3.2 Explain the importance of planning to a business enterprise. 3.3 Analyse the skills and Techniques of starting and managing small business successfully.	<ul style="list-style-type: none"> Lecture and illustrate with examples. Highlight to the students the initial problems likely to be faced. Invite a successful entrepreneur to deliver lecture to the students. 	<ul style="list-style-type: none"> Chalkboard
	3.4 Prepare and Project proposal. 3.5 Manage a small business profitably.	<ul style="list-style-type: none"> Lecture and introduce the students to the formats of various project proposal. 	<ul style="list-style-type: none"> Chalkboard

Course: Entrepreneurship Development I		Course Code: SDV 210	Contact Hours: 2 - 0 - 0
Course Specification: Theoretical Content			
General Objective 4.0 Know how to operate simple stock keeping records			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	4.1 Ordering spare parts/materials 4.2 Receipt of parts/materials 4.3 Storage of parts/materials 4.4 Issue of parts/materials	• Lecture and demonstrate to students how to write receipt and keep records of ordering, storage and issue materials.	• Store or any storage facility Record note-books.
General Objective 5.0: Know how to prepare and operate cash flow on spreadsheets			
Week	Specific Learning Outcome	Teachers Activities	Resources
7 - 8	5.1 Need for different records (capital, revenue, credit transaction, tax) 5.2 Formatting spreadsheet. 5.3 Operating spreadsheet.	• Lecture and demonstrate for the students to appreciate • Give practical exercise to students.	• Chalkboard and Computer
General Objective 6.0: Understand employment issues			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	6.1 Define the terms: education, training and development. 6.2 Relate education, training and development to employment. 6.3 Distinguish between skills and employment. 6.4 Explain the role of the private sector in employment generation.	• Lecture and cite examples.	• Chalkboard.
	6.5 Identify the forms and informal sectors. 6.6 Explain the issues of: (i) Rural youth and employment (ii) Urban youth and employment.		

Course: Entrepreneurship Development I		Course Code: SDV 210	Contact Hours: 2 - 0 - 0
Course Specification: Theoretical Content			
General Objective 7.0: Understand the Nigerian Legal System			
Week	Specific Learning Outcome	Teachers Activities	Resources
10	7.1 Explain the nature of law. 7.2 Analyse the sources of Nigerian laws. 7.3 Evaluate the characteristics of Nigerian Legal System.	• Lecture	• Chalkboard
General Objective 8.0 Comprehend the nature of contract and tort			
Week	Specific Learning Outcome	Teachers Activities	Resources
11-12	8.1 Define contract. and the various types of contracts 8.2 State the basic requirements for a valid contract. 8.3 Analyse contractual terms. 8.4 Examine vitiating terms. 8.5 Explain breach of contract and remedies. 8.6 Define Tort. 8.7 Explain types of Tort. 8.9 Discuss tortuous liabilities and remedies.	• Lecture	• Chalkboard
General Objective 9.0 Understand Agency and Partnership			
Week	Specific Learning Outcome	Teachers Activities	Resources
13	9.1 Define agency 9.2 Explain creation of Agency 9.3 Explain authority of the agent. 9.4 Analyse the rights and duties of principal agent and third parties. 9.5 Explain termination of agency and remedies. 9.6 Define partnership. 9.7 Examine creation of partnership. 9.8 Explain relations of partners to one another and to persons dealing with them.	Lecture	Chalkboard

Course: Entrepreneurship Development I		Course Code: SDV 210	Contact Hours: 2 - 0 - 0
Course Specification: Theoretical Content			
General Objective 9.0 Understand Agency and Partnership			
Week	Specific Learning Outcome	Teachers Activities	Resources
13	9.9 Analyse dissolution of partnership and remedies.	Lecture	Chalkboard
<p>Competency: The student will understand and have sufficient knowledge to plan the establishment of a small business and realize the pitfalls involved.</p> <p>Assessment: Coursework 20% Course tests 20% Practical 0% Examination 60%.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Wole Adewumi, "Business Management An Introduction", McMillan Nig. Ltd. Lagos. 1988. 2. Soji Olokoyo, "small Business Management Guide Entrepreneurs", Ola Jamon Printers and Publishers, Kaduna. 			

Entrepreneurship Development II

Course: Entrepreneurship Development II		Course Code: SDV 211	Contact Hours: 1-0-1
Course Specification: Theoretical Content			
General Objective 1.0: Understand Financial Management			
Week	Specific Learning Outcome	Teacher Activities	Resources
1 2	1.1 Define financial management 1.2 Explain sources and types of finding 1.3 Define the concepts of cost, price, revenue, profit and break-even point. 1.4 Explain financial statements e.g budgeting, balance sheet, profit and loss accounts, and cash flow budget. 1.5 Apply financial statements in business management.	Lecture	Chalkboard
General Objective 2.0: Know how to prepare simple accounts.			
Week	Specific Learning Outcome	Teacher Activities	Resources
	2.1 Dealing with assets 2.2 Preparing profit and loss statement. 2.3 Preparing balance sheet.	• Lecture and demonstrate with examples	• Chalkboard Examples of a balance sheet.
General Objective 3.0: Know simple cost preparation			
	3.1 Determining labour costs. 3.2 Determining direct machine cost. 3.4 Determine Overheads: labour, machine, and general	• Lecture. • Give students examples in each area.	- Ditto -
3-8	General Objective 4.0: Know product and job costing		
	4.1 product costing 4.2 Job costing 4.3 Project costing	• Lecture • Give student a are history of study.	- Ditto - - Case study data.
General Objective 5.0: Understand the Laws relating to formation of Companies of Companies			
	5.1 Identify the fundamental concepts in company law. 5.2 Explain memorandum and Articles of Association.		

Course: Entrepreneurship Development II		Course Code: SDV 211	Contact Hours: 1-0-1
Course Specification: Theoretical Content			
General Objective 5.0: Understand the Laws relating to formation of Companies of Companies			
9 10	5.3 Explain promoters, promotion and the prospectus. 5.4 Distinguish between shares and debentures. 5.5 Analyse the functions and powers of Directors, Secretaries and Auditors. 5.6 Explain liquidation of companies.		
General Objective 6.0: Comprehend Labour and Industrial Law			
Week	Specific Learning Outcome	Teacher Activities	Resources
11 12	6.1 Analyse the laws relating to employer - employee relationship 6.2 Explain industrial safety laws. 6.3 Examine water and public health laws. 6.4 Evaluate land acquisition.	Lecture -do-	Chalkboard -do-
General Objective 7.0: Understand Copyright and patent laws			
Week	Specific Learning Outcome	Teacher Activities	Resources
	7.1 Explain copyrights. 7.2 Explain patent. 7.3 Explain rights and liabilities under the copyrights and patent laws. 7.4 Evaluate beach and remedies		-do-
General Objective 8.0: Comprehend the nature of sale of goods			
Week	Specific Learning Outcome	Teacher Activities	Resources
14 - 15	8.1 Define contract of sale of goods 8.2 Distinguish sale of goods from other contracts e.g bastar, hire purchase and works and materials. 8.3 Explain duties of the parties. 8.4 Explain passing of properties and titles. 8.5 Examine breach and remedies.	Lecture -do-	-do- -do-

Course: Entrepreneurship Development II	Course Code: SDV 211	Contact Hours: 1-0-1
Course Specification: Theoretical Content		
	<p>Competency: The students should be able to read and understand accounts and balance sheets, they should also have a knowledge of Nigerian Law as applied to business routine. A sound knowledge of financial control of a small business should be acquired.</p> <p>Assessment: Coursework 20% Course tests 20% Practical 0% Examination 60%.</p> <p>References:</p> <ol style="list-style-type: none"> 1. A. E. Jennings "Accounting and Finance for Building and Surveying" Macmillan 2. I. E. Sagay "Nigerian Law of Contract" Spectrum Law Series 	

Site Management I

COURSE: Site Management I		Course Code: BLD 209	Contact hours 1-1-0
COURSE SPECIFICATION			
General Objective 1.0: Know the activities involved in site administration			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1 - 7	<p>1.1 Explain the principles of administration and control.</p> <p>1.2 Explain the effects of efficient site administration.</p> <p>1.3 Execute site management functions with respect to the following:</p> <ul style="list-style-type: none"> a. Preparation of schedules. b. Forecasting material requirements. c. Processing and ordering. d. Storage, protection, transport, loading and handling. e. Forecasting, overall programmes, short term programmes, forecast target. f. Reports to head office. g. day works, variations, progress reports. h. Time books, wages sheet. i. material log books. j. Mechanical plant requirements. k. Scaffolding (types and erection) l. Statutory diaries. m. Statutory inspections to excavation, scaffolding, hoist cranes, portable electric equipment. n. Maintenance and inspection. o. safe working conditions for mechanical plant etc. 	Lecture	Chalkboard Demonstrate materials, e.g charts, log books, etc.

COURSE: Site Management I		Course Code: BLD 209	Contact hours 1-1-0
COURSE SPECIFICATION			
General Objective 2.0: Know the basic legislation that relate to building construction			
Week	Specific Learning Outcome	Teacher's Activities	Resources
8-10	2.1 Explain delegated legislation. 2.2 Understand building legislation. 2.3 Understand the following. a. Town planning acts. b. Building regulations. c. Factory Acts.	<ul style="list-style-type: none"> • Introduce students to all building legislation and explain the use and application. • Show students the application of the various building legislation to: <ul style="list-style-type: none"> • Production drawing • Construction work 	<ul style="list-style-type: none"> • Factory Act legislation. • Building regulation legislation. • Town Planning Act legislation. • Health and Safety legislation.
General Objective 3.0: Know how to organize labour for building construction work			
Week	Specific Learning Outcome	Teacher's Activities	Resources
11 - 12	3.1 Determine labour requirements. 3.2 Explain labour forecasting. 3.3 Explain method of recruitment of labour.	<ul style="list-style-type: none"> • Show the student the need for labour output. • Demonstrate to the students division of labour. • Show the students how to construct a bar chart and net work analysis. • Show the students the use of programme progress chart. 	<ul style="list-style-type: none"> • Schedule of labour requirement. • Bar chart. • Net work Analysis.
General Objective 4.0: Know the basic principles of incentive for worker			
Week	Specific Learning Outcome	Teacher's Activities	Resources
13 - 15	Explain the general principles of incentive schemes. Explain financial and non financial incentives. Measuring and recording.	<ul style="list-style-type: none"> • Show the student the various productivity chart for all works on site. • Demonstrate and explain setting out of 'job' Bonus standards. • Show calculation of carried out? 	<ul style="list-style-type: none"> • Schedule of standard output. • Productivity schedule.
<p>Assessment: coursework: 20% Course Test 20% Practical 0% Examination 60%</p> <p>Competency: The Student should be able to manage a site and know the basic laws connected tom building</p> <p>References:</p> <ol style="list-style-type: none"> 1. J. T. Butter "Element of Administration for Building Students" 3rd Edition 2. John D> Donnw, A. James Barnes and Michael B. Metzso "Law for Business" 			

Site Management II

COURSE: Site Management II		Course Code: 210	Contact Hours: 2-0-0
COURSE SPECIFICATION: Theoretical Content			
General Object 1.0: Understand the structural problems in site management and organisation.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1 - 2	1.1 Appreciate the principle of organisation structuring. 1.2 Appreciate site management.	<ul style="list-style-type: none"> • Explain what is management and management hierarchy • Explain the organisation structure of small, medium and large Construction company. • Outline the span of site works • Management 	Chalkboard
General Objective 2.0: Understand and appreciate how decisions are made			
Week	Specific Learning Outcome	Teacher's Activities	Resources
3 - 5	2.1 Appreciate the rationality of decision making.	<ul style="list-style-type: none"> • Define the concept of decision making process. • Discuss the critical approach to decision making process. • Explain the need for decision on Projects. 	
General Objective 3.0: Understand the principles which govern effective communication in public and human relation.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
6 - 8	3.1 Appreciate how communication affects the individual and group performance.	<ul style="list-style-type: none"> • Explain what communication • Discuss how communication affects • The individual and group performance. • Discuss industrial relation on typical construction site. 	
General Objective 4.0: Understand and appreciate the importance of planning and controlling the execution of projects.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
9-13	4.1 Appreciate the need to plan work. 4.2 Appreciate the reasons and advantages of planning.	<ul style="list-style-type: none"> • Explain to students the involvement of management in carrying out decisions planning, communicating, coordinating, organising, motivating, controlling and staffing at all levels. • Discuss the necessity of planning • Explain the advantages of planning • Discuss the techniques used in planning simple construction work daily, and weekly on bar chart programme 	• Chalkboard

COURSE: Site Management II		Course Code: 210	Contact Hours: 2-0-0
COURSE SPECIFICATION: Theoretical Content			
General Objective 4.0: Understand and appreciate the importance of planning and controlling the execution of projects.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
		• Analyse simple construction work.	• Chalkboard
General Objective 5.0: Understand the process of works study and the application to site works.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
14-13	5.1 Explain work measurement and method study. 5.2 Appreciate value of work-study to individual and organization.		
<p>Assessment: coursework: 20% Course Test 20% Practical 0% Examination 60%</p> <p>Competency: The Student should be able to manage a site and understand the application of works study to site</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. Cole G.A. "Management Theory and Practice" 5th Edition 2. Ivor H. Seelay "Building Economics" 4th Edition 			

Technical Report Course

Technical Report Writing

PROGRAMME: BUILDING TECHNOLOGY ND			
COURSE: TECHNICAL REPORT WRITING		COURSE CODE: BLD 213	CONTACT HRS: 1- 1-0
Course Specification: Theoretical Content			
General Objective 1.0: Understanding the content of a technical report.			
Week	Special Learning Outcome:	Teachers Activities	Resource
1-2	1.1 Explain the meaning of technical report 1.2 Identify the purpose of technical reports 1.3 Explain types and uses of technical reports	Lecture and give examples	Chalkboard
General Objective 2.0: Understanding the methodology and sequence of writing technical reports.			
Week	Special Learning Outcome:	Teachers Activities	Resource
3-7	2.1 Discuss the following in technical reports: a. determination of topic and title b. justification of title c. abstract or synopsis of the report d. aim and objectives of the report e. classification of data f. scope and limitation of project g. data analysis (graphical, tabular and descriptive methods) h. presentation of data (use of appendices). 2.2 Explain how technical reports should be made clear and correct.	- do -	- do -
General Objective 3.0: Understand the information that is required in technical report writing.			
Week	Special Learning Outcome:	Teachers Activities	Resource
8-15	3.1 Information required in technical report writing. 3.2 Explain the various types of information that would be required in reports. 3.3 Determine the factors that influence solutions. 3.4 Advance building technology conclusion arising from factors.	• Lecture • Conduct a site visit- do -	

PROGRAMME: BUILDING TECHNOLOGY ND			
COURSE: TECHNICAL REPORT WRITING		COURSE CODE: BLD 213	CONTACT HRS: 1- 1-0
General Objective 3.0: Understand the information that is required in technical report writing.			
Week	Special Learning Outcome:	Teachers Activities	Resource
8-15	3.5 Select criteria required in case studies. 3.6 Determine critical analysis of case studies. 3.7 Produce summary. 3.8 Make propositions (Author's summary). 3.9 Develop conclusion to a technical report. 3.10 write a bibliography in standard format. 3.11 Explain terms of reference in report 3.12 Explain the difference between facts and opinions. 3.13 Explain how fact and opinions may be distinguished in writing reports. 3.14 Write reports on selected technical matters. 3.15 Re-write the abstract.	<ul style="list-style-type: none"> • Lecture • Conduct a site visit-do - 	
Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination 60% Competency: The student should be able to write a good technical report. Reference: 1. T. A. Burley, G. Osukiran" wokout operational Research".			

Quantity Surveying Courses

Measurement and Specification

PROGRAMME: Building Technology ND			
COURSE: Measurement and Specification		Course Code: QUS 102	Contact Hours: 2-0-0
COURSE SPECIFICATION			
General Objective 1.0: Understand the purpose of preparing a bill of Quantities using the various methods of processing Dimensions.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1-4	1.1 Explain the purpose of preparing bills of quantities. 1.2 Describe the application of computer in producing a bill of quantities. 1.3 State which item works that are normally covered by the preliminary section of the bill. 1.4 Write typical preamble clauses for incorporation into a bill.	<ul style="list-style-type: none"> • Demonstrate the relevance of bills of • Quantities in construction processes. • Show a typically computer produced bill of quantities. • The application of the computer in the production of bill of quantities. • Explain the items. 	<ul style="list-style-type: none"> • Chalk Board.
General Objective 2.0: Know all the different kinds of schedules required in Producing a bill of quantities.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5-6	2.1 Prepare schedules of: (a) Doors and windows (b) Finishings 2.2 Prepare drainage schedules 2.3 State the purposes of the schedule of basic rates	<ul style="list-style-type: none"> • Demonstrate using drawings, bill of quantities and assignments. • Demonstrate using drawings, bill of quantities and assignments • Explain Rates 	<ul style="list-style-type: none"> • Chalk Board, Drawings, BOQ • Chalk Board, Drawings, BOQ

PROGRAMME: Building Technology ND			
COURSE: Measurement and Specification		Course Code: QUS 102	Contact Hours: 2-0-0
General Objective 3.0: Know how to write simple specifications to Various work sections.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
7-15	<p>3.1 State the purposes and uses of specification.</p> <p>3.2 State the sources of information for writing specifications.</p> <p>3.3 Write clear concise and accurate specification of materials and Workmanship for Sand and Cement.</p> <p>3.4 Write clear, concise and accurate specification of materials and workmanship for Gravel and concrete work.</p> <p>3.5 Write clear, concise and accurate specification of materials, and workmanship for Excavation and Earthwork.</p> <p>3.6 Write clear, concise and accurate specification for materials and workmanship for brickwork, blockwork and masonry</p> <p>3.7 Write, clear, concise and accurate specification of materials and workmanship for timber woodwork</p>	<ul style="list-style-type: none"> • Show a typical specification work • Explain relevant specification in • Building works. 	<ul style="list-style-type: none"> • Building works. • Building works.Chalk Board.
<p>Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination: 60%</p> <p>Competency: The students should be able to prepare quantities, schedules and bill of quantities</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. Ivor H. Seelay & Roger Winfield "Building Quantities Explained" 5th Edition 2. Ivor H. Seekley "Building Quantities explained" 3rd Edition 			

Building Measurement and Specifications

COURSE: Building Measurement and Specifications		Course Code: QUS 201	Contact Hours: 2-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 1.0: Understand the duties and functions of a Quantity Surveyor			
Week	Specific Learning Outcome	Teacher's Activities	Resources
1	1.1 State the duties which a quantity surveyor is expected to perform. 1.2 Explain the work of the consultant Quantity Surveyors in relation to the Quantity Surveyor employed by a construction organization.	• Invite a practising Quantity Surveyor to explain his duties with a contracting firm and consulting firm.	• Chalk & Board
General Objective 2.0: Understand the relationship between the Quantity Surveyor and the other members of the construction team			
Week	Specific Learning Outcome	Teacher's Activities	Resources
2	2.1 Describe the relationship between the quantity surveyor and other members of the building team.	• Invite professionals in the teams to narrate their function to the students.	
General Objective 3.0: Understand the uses of standard method of measurement for building works			
Week	Specific Learning Outcome	Teacher's Activities	Resources
3	3.1 Explain the historical background of SMM. 3.2 Identify various works section heading and their unit of measurement. 3.3 Explain the standard method of measurement of building works. 3.4 Determine where and when to use the various unit of measurement.	• Demonstrate using the building models, sections, and SMM.	• Chalk & Board
General Objective 4.0: Know how to process dimensions, collecting quantities and preventing them for all works sections in traditional elemental and annotated bill forms.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
4	4.1 Explain method of booking dimensions and be able to use them where and when necessary. 4.2 Prepare an abstracting sheet using traditional methods. 4.3 Identify the difference between taking-off, abstracting, direct billing, cut and shuffle and billing sheet.	• Demonstrates using examples and practical assignments.	• Chalk & Board

COURSE: Building Measurement and Specifications		Course Code: QUS 201	Contact Hours: 2-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 4.0: Know how to process dimensions, collecting quantities and preventing them for all works sections in traditional elemental and annotated bill forms.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
4	4.4 State the various methods of bills of quantities. 4.5 Explain the primary purpose and other uses of the Bill of Quantities. 4.6 Distinguish between the bill formats - traditional, elemental and operational.	• Demonstrates using examples and practical assignments.	• Chalk & Board
General Objective 5.0: Understand the method of quantities for work involve in simple buildings.			
Week	Specific Learning Outcome	Teacher's Activities	Resources
5	5.1 Take off quantities for simple substructure works. 5.2 Take off quantities for simple wall construction.	• Demonstrate using drawing and models use practical assignments.	• Chalk, board • Drawings and • Models
General Objective 6.0: Know how to take-off quantities for work involved in traditional domestic buildings and simple industrial buildings of not more than two storeys			
Week	Specific Learning Outcome	Teacher's Activities	Resources
6 - 8	6.1 Take off quantities for sub-structural work including undulating sloping sites, stepped foundation and basements. 6.2 Take off quantities for simple wall construction in super structure. 6.3 Take off quantities for all kinds of floor construction. 6.4 Take -off quantities for simple roof construction and coverings.	• Demonstrates using examples from drawings and models. Use practical assignments.	• Chalk & Board • Drawing and • Models
9 - 12	6.5 Take-off quantities for doors and windows including adjustment to form. 6.6 Take-off quantities for building works for simple re-enforced concrete framework. 6.7 Take-off quantities for building works for simple steel framing and trusses. 6.8 Take off quantities for building works for staircases in timber and concrete.		

COURSE: Building Measurement and Specifications		Course Code: QUS 201	Contact Hours: 2-0-2
COURSE SPECIFICATION: Theoretical Content			
General Objective 6.0: Know how to take-off quantities for work involved in traditional domestic buildings and simple industrial buildings of not more than two storeys			
Week	Specific Learning Outcome	Teacher's Activities	Resources
9 - 12	6.9 Take-off quantities for building works for simple drainage work and external works.		
General Objective 7.0: Know how to produce bills of quantities using various methods			
Week	Specific Learning Outcome	Teacher's Activities	Resources
13	7.1 Prepare bills of quantities using: a. The method of abstracting. b. The method of direct billings.	• Use Drainage, take off sheets, and practical assignments.	• Chalk, board. • Drawings and • Models
14	7.2 Describe accurately how to prepare a bill of quantities using the cut and shuffle method.	• Use drawings, take-off sheets and practical assignments.	- do -
<p>Assessment: Coursework: 20% Course test: 20% Practical: 0% Examination: 60%</p> <p>Competency: The students should be familiar with the members of the team in the construction industry and should be able to prepare quantities and bills for domestic and industrial buildings.</p> <p>References:</p> <ol style="list-style-type: none"> 1. T. C. Oworoh "Principles of measurement of Buildings" volume one 2. Ivor H. Seelay "Advanced Building measurement" 2nd Edition macmillam 			

COURSE: Building Measurement and Specification		Course Code: QUS 201	Contact Hours: 2-0-2
COURSE SPECIFICATION: Practical content			
WEEK	Specific Learning Outcome:	Teacher's Activities	Resources
1-3	1.1 Prepare an abstracting sheet using traditional methods.	• Demonstrates using examples and practical assignments.	• Chalk & Board
4-5	a. Take off quantities for simple substructure works. b. Take off quantities for simple wall construction.	• Demonstrate using drawing and models use practical assignments.	• Chalk, board • Drawings and • Models
6-13	a. Take off quantities for sub-structural work including undulating sloping sites, stepped foundation and basements. b. Take off quantities for simple wall construction in super structure. c. Take off quantities for all kinds of floor construction. d. Take -off quantities for simple roof construction and coverings. e. Take-off quantities for doors and windows including adjustment to form. f. Take-off quantities for building works for simple re-enforced concrete framework. g. Take-off quantities for building works for simple steel framing and trusses. h. Take off quantities for building works for staircases in timber and concrete. i. Take-off quantities for building works for simple drainage work and external works. j. Prepare bills of quantities using: k. The method of abstracting. l. The method of direct billings.	• Demonstrates using examples from drawings and models. Use practical assignments. • Use Drainage, take off sheets, and practical assignments.	• Chalk & Board • Drawing and • Models • do - • Chalk, board. • Drawings and • Models

Surveying Courses

Basic Principles in Surveying I

Course: Basic Principles in Surveying I		Course Code: SUG 101	Contact Hours: 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 1.0: Understanding the Basic Principles and Scope of Surveying and Geo-informatics			
Week	Specific Learning Outcome	Teachers Activities	Resources
1	<p>1.1 Explain the principle of working from 'whole to part' in Survey/Geo-data works.</p> <p>1.2 State the importance of "scientific honesty" made on observations.</p> <p>1.3 Explain with examples the various "checks" made on field observations and during computation.</p> <p>1.4 Define errors or misclosure in surveys and describe methods of "balancing" these.</p> <p>1.5 Explain the need and procedure for "examination" of surveys and Geo-data.</p> <p>1.6 Describe the various classes of survey/Geo-data and their order of accuracy.</p> <p>1.7 Explain the principles of 'economy of accuracy' and its influence on choice of equipment and methods.</p>	Lecture, give examples of various classes of survey as used in civil engineering.	Field books tables
2	<p>1.8 Explain the principles of 'consistency' in surveys/Geo-data.</p> <p>1.9 Distinguish between accuracy and precision.</p> <p>1.10 Describe the procedure of entrusting 'custody' of survey/Geo-data monuments to local officials and the instructions for their 'preservation'.</p> <p>1.11 Name the different branches of surveying and Geo-informatics stating their aimse.g geodetic survey topographic survey, cadastral survey, hydrographic survey, engineering and large scale surveys.</p>	- do -	

Course: Basic Principles in Surveying I		Course Code: SUG 101	Contact Hours: 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 2.0: Understand the use and methods of using Linen and steel tapes in making linear measurements.			
Week	Specific Learning Outcome	Teachers Activities	Resources
4	2.1 Explain the effect of (a) misalignment (b) slope (c) temperature (d) tension and (e) standardisation error on measured distances. 2.2 Apply the corrections listed in 2.1 above. 2.3 Identify chain surveying instruments e.g. Linen tapes, steel tapes, ranging rods. 2.4 State the necessary precautions in the use of the above instruments. 2.5 State the criteria for selection of survey lines and offsets and the limitations on lengths.	• Lecture, examples of calculation for corrections to be given.	• Tapes, chains, and ranging rods.
	2.6 Describe the methods of making linear measurements in chain surveys - both along the survey line and along offsets. 2.8 State limiting conditions on measurement accuracy on 2.6 above. 2.9 Explain common errors in chain surveying and their sources - e.g squaring of building corners, wrong booking of values.	- do -	- do -
5	2.10 Explain with sketches the basic methods of check or proof lines, the use of control frame work for position and orientation. 2.11 Describe the general procedure for carrying out a chain survey. 2.12 Illustrate the method of booking field measurements in chain surveys. 2.13 Enumerate field problems and methods of overcoming them. 2.14 Identify errors in simple chain surveys. 2.15 Carry out survey of an area of at least one hectare. 2.16 Book all field measurements. 2.17 Plot survey at a suitable scale. 2.18 Draw to field standards using conventional signs and hand lettering.	- do -	- do -

Course: Basic Principles in Surveying I		Course Code: SUG 101	Contact Hours: 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 3.0: Understanding the principles of measurement of angles with theodolites and bearings with a magnetic compass and perform such measurement.			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	3.1 Describe the basic principles of ordinary spirit levelling and digital spirit levelling. 3.2 List the specifications of tertiary levelling. 3.3 Explain the (optimum) observing procedure.	Lecture	Compass, theodolite, targets.
7	3.4 Describe the use of and criteria for selections of levelling datums. 3.5 Adjust collimation error in level. 3.6 Describe the construction and use of semi-permanent and permanent tertiary bench-marks. 3.7 Book field observations.	Ditto	Ditto
8	3.8 Reduce level. 3.9 Explain arithmetical checks in level reduction. 3.10 Carry out tertiary levelling, reduction and adjustment to produce elevations of all permanent stations along a circuit of about 2km, using ordinary and digital levels. 3.11 Enumerate the uses of tertiary levelling.	Ditto	Ditto
General Objective 4.0: Tertiary Levelling			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	4.1 Describe the various units of angular measure e.g degrees grads and radian measures, working out their conversion factors. 4.2 Explain the working principles of a surveyors' (Prismatic) compass. 4.3 Describe the procedure of observation with a surveyors' (Prismatic) compass.	• Lecture, give examples of reduction of levels to National datum.	• Levels of various types, staff.
10	4.4 Explain the method of observation with a theodolite. 4.5 Explain the difference in the reading procedure of a theodolites 4.6 Carry out angular measurements with prismatic compass and theodolites.	Ditto	Ditto

Course: Basic Principles in Surveying I		Course Code: SUG 101	Contact Hours: 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 5.0: Understand the principles of survey computations and plotting.			
Week	Specific Learning Outcome	Teachers Activities	Resources
11	5.1 Reduce the measured field data with a theodolite to obtain required angles. 5.2 Deduce bearings from the obtained angles. 5.3 Adjust compass bearings of the compass surveyed area. 5.4 Carryout the computation of 5.5 above. 5.5 Retrieve the measured field data of the surveyed area by a total station onto a PC. 5.6 Process the data using the PC. 5.7 Plot the plan of the surveyed area manually at different scales (small, medium and large)	<ul style="list-style-type: none"> Lecture, give examples of computations. 	<ul style="list-style-type: none"> Calculators, computer.
General Objective 6.0: Read, interpret make measurement from maps, layout and engineering plan.			
Week	Specific Learning Outcome	Teachers Activities	Resources
12	6.1 State the uses of different types of map e.g atlas, geographical, topographical, engineering and guide maps. 6.2 Explain the principles of map scale. 6.3 State the relationships between map scales or representative fractions and the contour interval. 6.4 Identify map symbols and conventional signs. 6.5 Explain their basis and use. 6.6 Identify various Nigerian map series. 6.7 Use map catalogues. 6.8 Describe various methods of showing relief on maps e.g spot heights, hachures, contours.	<ul style="list-style-type: none"> Lecture, Give students maps and examples to work on. 	<ul style="list-style-type: none"> Examples of various types of maps to students to examine.
13	6.9 Define map grids. 6.10 Use map grids. 6.11 Explain how to establish different reference directions e.g true north, grid north and magnetic north. 6.12 Define the relationship between the different directions i.e convergence, declination and compass variation.		<ul style="list-style-type: none"> Set of maps for student exercises. Drawing instruments, protractors dividers, Parallel rule, Scale rules

Course: Basic Principles in Surveying I		Course Code: SUG 101	Contact Hours: 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 6.0: Read, interpret make measurement from maps, layout and engineering plan.			
Week	Specific Learning Outcome	Teachers Activities	Resources
13	6.13 Scale off grid coordinates. 6.14 Interpret different types of map, layout plans and diagrams/sketches. 6.15 Identify simple planimetric details on imageries. 6.16 Measure distances from maps and plans. 6.17 Determine radius of curves from given diagram. 6.18 Read off directions/bearing between given features. 6.19 Describe different map reference system.		<ul style="list-style-type: none"> • Set of maps for student exercises. • Drawing instruments, protractors dividers, Parallel rule, Scale rules
<p>Revision 2 weeks.</p> <p>References: Survey for Engineers (1994) Uran J and Price WF MacMillian Site Surveying (1993) Muskett J., Blackwell..</p> <p>Assessment Coursework 20% course tests 20% Practicals 20% Examination 40%,</p> <p>Competency: The student completing this unit should be proficient at measuring distances, and in undertaking a chain survey. The student should also be familiar with leveling techniques be able to reduce the data and plot profiles of levels.</p> <p>The student should be able to use a theodolite for measuring and setting out angles, undertake associated calculations and read maps accurately.</p>			

Basic Principles in Surveying II

Course: Basic Principles in Surveying II		Course Code: SUG 102	Contact Hours 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 1.0: Upon Completion of this course, the student should be able to:			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 3	Distance Measurement 1.1 Observe small vertical angles precisely by repetition. 1.2 Determine horizontal distance using vertical stage and tacheometer. 1.3 Explain the special characteristics and use of self reducing tacheometers. 1.4 Measure distances using a theodolites as tacheometer. 1.5 Determine spot-heights and survey detail by tacheometry.	Lecture, with examples. Ditto Ditto	Engineer's level Fieldboob Ditto Ditto
General Objective 2.0: Understand the procedure and methods of third order theodolite and total station traversing.			
Week	Specific Learning Outcome	Teachers Activities	Resources
4	2.1 Identify the various items of equipment used in theodolite and total station traversing. 2.2 List specifications for measurement of angles and distance. 2.3 Determine of bearings and tolerable linear and angular misclosures for secondary and tertiary traverses. 2.4 Explain the need for connection to and procedure for verification of existing controls. 2.5 Describe field method of traversing using surface taping. 2.6 Explain the various precautions in field measurements. 2.7 Describe the field checks applicable.	<ul style="list-style-type: none"> • Lecture • Worked examples to demonstrate computations. 	<ul style="list-style-type: none"> • Theodolite • Tapes

Course: Basic Principles in Surveying II		Course Code: SUG 102	Contact Hours 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 2.0: Understand the procedure and methods of third order theodolite and total station traversing.			
Week	Specific Learning Outcome	Teachers Activities	Resources
5	2.8 Use the force centring equipment explaining special advantage thereof. 2.9 Explain the role of theodolite and total station traversing in provision of control for surveys. 2.10 Carry out traverse using surface taping 2.1. Verify the control to which the survey 2.11 is connected, the surveying of adjacent details (by radiation and intersection), computing the traverse, adjusting distances, bearings and co-ordinates, and producing a plan in ink	• Lecture • Worked examples to demonstrate computations	• Theodolite • Tapes
General Objective 3.0: Understand the principles, field methods and calculation procedures for minor triangulation			
Week	Specific Learning Outcome	Teachers Activities	Resources
6	3.1 Explain the basic principles of triangulation. 3.2 Enumerates other parameters of triangulation such as selection, beaconing, numbering of triangulation stations, baseline, azimuth determination, extension of connected triangles, angular repetition, reciprocal observations, angular misclosures, field measurement checks etc.	Ditto	Ditto
7	3.3 Explain methods of computing coordinates and heights from field records.	Ditto	Ditto
General Objective 4.0: Understand the basic principles and methods of using total station and GIS Equipment.			
Week	Specific Learning Outcome	Teachers Activities	Resources
8	4.1 Describe a total station and its accessories. 4.2 Compare total station with a theodolite. 4.3 Explain the working principles of a total station. 4.4 Describe the procedures of observation with a total station. 4.5 Carry out a simple survey using a total station.	• Lecture	• Total station • Targets

Course: Basic Principles in Surveying II		Course Code: SUG 102	Contact Hours 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 4.0: Understand the basic principles and methods of using total station and GIS Equipment.			
Week	Specific Learning Outcome	Teachers Activities	Resources
9	4.6 Retrieve the measured data from a total station field data on to a PC. 4.7 Process the data from the PC. 4.8 Plot the plan of the surveyed area manually. 4.9 Describe the various types of GPS equipment e.g hand held and tripod types. 4.10 Explain the working principles of GPS. 4.11 Carry out GPS observations on selected points.	Ditto	<ul style="list-style-type: none"> • Total station • Computer • GPS • Software
General Objective 5.0: Understand problems involved in producing contoured plans.			
Week	Specific Learning Outcome	Teachers Activities	Resources
10	5.1 Name the different reference directions for contoured plan. 5.2 Explain basic need for heights in topographical Engineering and Township Surveys. 5.3 Illustrate optimum distribution of spot heights for contoured plans. 5.4 Describe the use of grids of levels. 5.5 Carry out contouring at 0.5m vertical interval from a mesh of spot heights.	<ul style="list-style-type: none"> • Lecture. 	<ul style="list-style-type: none"> • Levels • Theodolite
General Objective 6.0: Understand setting in out procedure for a medium sized building including.			
Week	Specific Learning Outcome	Teachers Activities	Resources
11	6.1 Identify the equipment required to set-out a building with accompanying access roads. 6.2 Explain how to set-out a building and the accompanying constraints. 6.3 Construct profiles and datum for a building. 6.4 Explain how profiles are used to control. 6.5 Identify the instruments used for taking internal and external dimensions.	Lecture, Illustrate site practice with slides or photographs.	Theodolite/Total Station

Course: Basic Principles in Surveying II		Course Code: SUG 102	Contact Hours 1 - 0 - 3
Course Specification: Theoretical Content			
General Objective 6.0: Understand setting in out procedure for a medium sized building including.			
Week	Specific Learning Outcome	Teachers Activities	Resources
12	<p>6.6 Determine the areas of a building and its site.</p> <p>6.7 Explain how running internal and external measurements are taken horizontally and vertically.</p> <p>6.8 State the procedure for checking vertically a building using Theodolite, Optical Plumb, and Plumb-bob.</p> <p>6.9 Describe the invert of a drain, a sight rail and a traveller.</p> <p>6.10 Calculate suitable length of a traveller and reduced levels of sight rails from given drawings.</p> <p>6.11 Establish sight rails for horizontal and depth control of a straight drain between manholes.</p>	Ditto	<ul style="list-style-type: none"> • Theodolite • Optical Plumb • Plumb-bob
13	<p>6.12 Explain the survey terms use in road construction.</p> <p>6.13 Describe methods of route surveying.</p> <p>6.14 Describe the types of control used for embankments, cuttings and levels.</p> <p>6.15 Calculate volumes of cut and fill on a given straight road with transverse sloping ground.</p>	Ditto	Theodolite/total station levels
<p>Revision 2 weeks. Revise main topics, gives worked examples etc.</p> <p>References Surveying for Engineers (1994) Uren J Macmillan and Price WF, Setting Out Procedures (1998) Sonlorove BM Butherworth Heineman.</p> <p>Assessment: Coursework 20% Course tests 20% Practical 20% Examination 40%.</p> <p>Competency: The student who competes this unit should be proficient in using levels and theodolites, capable of undertaking simple surveys and be able to set out buildings with confidence.</p>			

Course: Basic Principles of Surveying II		Course Code: SUG 102	Contact Hours: 1 -0 - 3
Course Specification: Practical Content			
General Objective 1.0: The use of levels, theodolites and total station in measurement of, bearings, highting, and triangulation and plan production.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1 - 5	Carry out compass traversing of a closed figure, produce the plan and make graphical adjustment.	<ul style="list-style-type: none"> • Demonstrate compass traversing and direct the student to produce plan. 	<ul style="list-style-type: none"> • Compass, drawing paper, scales, pencil, rules, eraser.
6 - 7	Carry out theodolite traversing of the roads surrounding the school of engineering. Compute and plot the traverse.	<ul style="list-style-type: none"> • Supervise the use of traversing. • Direct the students to use reduced bearing and distances to plot a traverse. 	<ul style="list-style-type: none"> • Theodolite, total station, targets, poles, drawing
8 - 12	Use theodolite along with staff to obtain distances and heighths.	<ul style="list-style-type: none"> • Supervise the use of theodolites as in tacheometric surveys. 	<ul style="list-style-type: none"> • paper, pencil, eraser. • Theodolite, staff.
12-15	Determine spot levels and survey detail by tacheometer working at accuracies attainable in various methods of optical distance measurements. Plots datum to scale and prepares a contour drawing. Carry out tertiary levelling, reduction and adjustment to produce elevations of all permanent stations along a circuit of about 5kms. Undertake a service of setting out exercises, e.g. for a small building.	<ul style="list-style-type: none"> • Demonstrate the procedure for tertiary levelling along a circuit. 	<ul style="list-style-type: none"> • Levels, pegs, tape. • Theodolite staff.

SIWES and Project

Supervised Industrial Work Experience Scheme

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 1.0: Understand the organisational structure In his/her place of attachment.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	1.1 Identify the various departments/units of the organization. 1.2 Identify the functions of the various units or departments in the organization. 1.3 Identify the relationships between the different units within the organisation.		
General Objective 2.0: Know the general safety precautions in the construction industry			
Week	Specific Learning Outcome	Teachers Activities	Resources
	2.1 State the safety precautions required on a construction site. 2.2 Apply general safety regulations to work situation such as: a. Personal safety. b. Safety of other workers. c. Clothing. d. Cleanliness of work environment. e. Equipment/tools on the construction site.		
General Objective 3.0: Understand the various processes of site Preparation			
Week	Specific Learning Outcome	Teachers Activities	Resources
	3.1 Interpret the working drawings either by sketching demonstration or any other method as the case may be. 3.2 Conduct the soil investigation by approved methods such as trial holes, boreholes. 3.3 Perform on site and laboratory tests. 3.4 Carry out site cleaning and levelling using appropriate equipment. 3.5 Set out building using builder's square or theodolite methods.		

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 4.0: Understand the methods of setting out of Buildings			
Week	Specific Learning Outcome	Teachers Activities	Resources
	4.1 Interpret building drawings. 4.2 Make working drawings from building designs. 4.3 Dig trenches in accordance with the set out lines for even and uneven grounds. 4.4 Establish the final level of the concrete footing using levelling pegs and spirit level.		
General Objective 4.0: Know the techniques of concrete Production			
Week	Specific Learning Outcome	Teachers Activities	Resources
	5.1 Batch aggregate by volume and by mass. 5.2 Measure water in correct ratio to volume or mass. 5.3 Measure cement in correct proportion to the volume or mass of the concrete. 5.4 Mix out self by hand and machine. 5.5 Carry out self and workability tests on aggregates. 5.6 Transport, place, compact and sieve concrete using appropriate tools and equipment. 5.7 Conduct crushing strength and rebound tests on hardened concrete.		
General Objective 6.0: Understand the construction of concrete and block walls and general roofing.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	Concrete and Block Walls. 6.1 Build block walls using stretcher and header boards ensuring correct alignment. 6.2 Erect form work for concrete works. 6.3 Assemble a roof truss on site with the help of the working drawing. 6.4 Fix the roof truss in 6.3 above on the given building. 6.5 Apply appropriate roof coverings.		

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 7.0: Understand the construction and fixing of doors and windows.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	7.1 Construct doors and windows with appropriate fixing devices. 7.2 Construct doors and windows with machines.		
General Objective 8.0: Understand the construction of ground and upper floors			
Week	Specific Learning Outcome	Teachers Activities	Resources
	8.1 Fill and ram laterite. 8.2 Compact hard core. 8.3 Place oversite concrete in accordance to specifications. 8.4 Construct and erect form work for upper floors. 8.5 Place reinforcement according to specifications. 8.6 Place concrete on form work according to specifications.		
General Objective 9.0: Understand the use of timber and metal Scaffolding.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	9.1 Provide solid base for scaffolding. 9.2 Assemble scaffolding ensuring correct alignment and grid, in compliance with building regulations as they affect the use of scaffolds. 9.3 Test scaffoldings at required intervals. 9.4 Dismantle scaffoldings appropriately after use.		
General Objective 10.0: Know lay-out of site, materials and connections.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	10.1 Plan the lay-out of site. 10.2 Establish positions of public utility connection. 10.3 Identify materials necessary for connection. 10.4 Connect temporary services to site. 10.5 Test temporary connections.		
11.0 Know the various materials for finishes and Their application.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	11.1 Test the various materials for suitability for finishes e.g. silk test grading. 11.2 Carry out various types of finishes in the building. 11.3 Test for defects in application.		

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 12.0: Understand different types of fittings and Furniture installation			
Week	Specific Learning Outcome	Teachers Activities	Resources
	12.1 Show the correct usage and application of various types of fittings. 12.2 Install various fittings (doors, windows). 12.3 Maintain and effect repairs to faulty fittings.		
General Objective 13.0: Know the necessary practical skill in plumbing Works and installation of sanitary appliances.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	13.1 Interpret correctly service drawings. 13.2 Carry plumbing and sanitary installations Effectively. 13.3 Test for defects. 13.4 Maintain plumbing and sanitary I installations.		
General Objective 14.0: Understand the installation of air conditioning			
Week	Specific Learning Outcome	Teachers Activities	Resources
	14.1 Carry out installation of air conditioners in accordance with the general regulations.		
General Objective 15.0: Acquire basic skills in external works			
Week	Specific Learning Outcome	Teachers Activities	Resources
	15.1 Interpret drawings on external works. 15.2 Set out external drainage. 15.3 Install external drainage. 15.4 Test for defects in external drainage e.g. smoke test. 15.5 Maintain external drainage installations. 15.6 Make simple landscape design. 15.7 Prepare ground for landscaping. 15.8 Maintain landscaping.		

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 16.0: Know how to read and interpret drawings For both residential and office buildings			
Week	Specific Learning Outcome	Teachers Activities	Resources
	<p>16.1 Evaluate the convention being adopted in folding storing and retrieval of drawings.</p> <p>16.2 Interpret production, drawings, i.e. plans, elevations, sections, and details drawings.</p> <p>16.3 Interpret simple Engineering drawings, e.g plans sections, and details drawings.</p> <p>16.4 Make the drawings of an architectural project from designs produced by and architect.</p>		
General Objective 17.0: Understand the various construction processes			
Week	Specific Learning Outcome	Teachers Activities	Resources
	<p>17.1 Evaluate the various operations and how they are being sequenced.</p> <p>17.2 Identify the various operatives involved in the construction processes, participating where feasible.</p> <p>17.3 Evaluate the economy in the use of labour, material and equipment with high initial costs especially for repetitive works such as scaffolding in metal forms as opposed to timber forms.</p>		
General Objective 18.0: Understand the post-contract relationship among The various professionals, contractor The client with regard to site meetings and Valuations.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	<p>18.1 Distinguish the parties to the contract.</p> <p>18.2 Explain the relationship between the professional Quantity Surveyor and other professionals like Architects, Engineering, Clerk of Works, etc. and state their responsibilities on the site.</p> <p>18.3 Write a valuation report and valuation certificate for a given project stating which professionals are responsible for either.</p> <p>18.4 State the strength of a payment certificate with regards to the contractor's capability in collecting payment from the client.</p>		

Course: Supervised Industrial Work Experience Scheme		Course Code: SIW 200	Contact Hours:
Course Specification: Theoretical Content			
General Objective 19.0: Know the mechanisms of site administration And the safety health and welfare regulations Operative at the site.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	19.1 Illustrate the organisational chart of the site 19.2 Describe the relationship between the various construction team of the company. 19.3 Identify the placement of accident prevention signs including provisions of lighting, telephone etc, on site 19.4 Identify the establishment of first aid boxes and their location on site. 19.5 Identify the type of unions that exist on the site 19.6 Evaluate the social services provided by the contractor to his staff 19.7 State the grievances procedure in the construction firm.		
General Objective 20.0: Know the methods of ordering receiving Requisitioning and checking of materials on site			
Week	Specific Learning Outcome	Teachers Activities	Resources
	20.1 Evaluate the procedure in ordering materials for construction works. 20.2 Check material invoices on delivery 20.3 Issue out materials from site store, following appropriate procedures.		
General Objective 21.0: General Objective: 21.0 Know how to produce technical reports with Bar charts of all activities undertaken during The Supervised Industrial Work Experience Scheme.			
Week	Specific Learning Outcome	Teachers Activities	Resources
	21.1 Record all the activities that are carried out each day (each student should possess “an industrial attachment note book” to do this). 21.2 Record the weekly summary of his/her activities in his/her log book and have it certified by his industry based supervisor. 21.3 Record graphically his weekly activities using bar charts e.g. 21.4 Write a monthly summary of his/her activities for his/her supervising lecturers comments in his/her log book. 21.5 Write a comprehensive technical end-of industrial attachment report.	<ul style="list-style-type: none"> • Understanding. • Read and Interpret. 	

Project

Course: Project (ND)		Course Code: 200	Contact Hours: 0-0-4
Course Specification: Theoretical Content			
General Objective 1.0: Know how to carry out a project			
Week	Specific Learning Outcome	Teachers Activities	Resources
1 - 15	1.1 Define Project 1.2 Explain the types of project 1.3 Explain the importance of each type of project 1.4 Select a project topic relating to Building/Quantity Survey using design and production 1.5 Develop the literature of the topic 1.6 Prepare the project schedule 1.7 Investigate the problems 1.8 Assess the result deciding further work necessary to carry the problems to logical conclusion. 1.9 Prepare clear report stating the aims and objectives using design and other criteria under supervision of the lecturer or advisers. 1.10 Development design for production. 1.11 Develop costing and estimating models 1.12 Relate the aims, objectives, design and criteria 1.13 Develop new models if any 1.14 Assemble the design and frame where necessary. 1.15 Draw up conclusion 1.16 Types the report to an acceptable standard 1.17 Bind the report 1.18 Present the report under the supervision of the lecturer or supervisor to accredited audience		
Assessment: Course work- 0%; Course test - 0%; Practical - 0%; Project Report - 100% Competency: The student should be able to carryout simple site work and produce a report of his activity.			

Guidelines for text book writers

The following guidelines are suggestions from the Engineering Committees to the writers of the textbooks for the new curricula. They are intended to supplement the detailed syllabuses which have been produced, and which define the content and level of the courses.

Authors should bear in minds that the curriculum has been designed to give the students a broad understanding of applications in industry and commerce, and this is reflected in the curriculum objectives.

- One book should be produced for each syllabus
- Page size should be A4
- The front size should be 12 point for normal text and 14 point where emphasis is need
- Line spacing should be set to 1.5 lines
- Headings and subheadings should be emboldened
- Photographs, diagrams and charts should used extensively thought the book, and these items must be up-to-date
- In all cases the material must be related to industry and commerce, using real life examples wherever possible so that the book is just a theory book. It must help the students to see the subject in the content of the ‘real word’
- The philosophy of the courses is one of an integrated approach to theory and practice, and as such the books should reflect this by not making and artificial divided between theory and practice.
- Illustrations should be labeled and numbered.
- Examples should drawn from Nigeria wherever possible, so that the information is set in a country context.
- Each chapter should end with student self-assessment quotations (SAG) so that student can check their own master of the subject.
- Accurate instructions should be given for any practical work having first conducted the practical to check that the instructions do indeed work
- The books must have a proper index or table of contents, a list of references and an introduction based on the overall course philosophy and aims of the syllabus.
- Symbols and units must be listed and a unified approach used throughout the book
- In case of queries regarding the contents of the books and the depth of information, the author must contact the relevant curriculum committee via the National Board for technical Education.
- The final draft version of the books should be submitted to Nigerian members of the curriculum working groups for their comments regarding the content in relation to the desired syllabus.

List of Minimum Resources

LIST OF EQUIPMENT FOR THE NATIONAL DIPLOMA IN BUILDING TECHNOLOGY PROGRAMME

LABORATORIES STRUCTURES/Strength of Materials

1. Two-hinged arch apparatus	1
2. Continuous beam apparatus	1
1. Deflection of beam apparatus	
2. Bending moment & shearing force apparatus	1
3. Elastic beam apparatus	1
4. Elastic deflection of frames	1
5. Struts buckling apparatus	1
6. Plastic bonding of portal frames	1
7. Perfect or redundant trusses apparatus	1
2. Material Science Laboratory	
1. B & K sound level units octave filter	3
2. Micro-computers	1
3. Planimeter	3 sets
4. Stop watches	10
5. Daylight factor units	3 sets
6. Sound Pressure meter	3
7. Accelerometer for vibration analysis	2
3. Soil Mechanics	
1. Consistency limits test apparatus	10
2. Compacting core machine	1
3. Compacting factor testing machine	1
4. Particle size distribution lost apparatus	5
5. Compaction test apparatus	1
6. Core penetrometer	1
7. Moisture content test apparatus	6
8. Specific gravity test apparatus	10
9. Density test apparatus	10
10. Le Chateller test apparatus	5
11. Augers and rigs	6
12. V-B consistometer test apparatus	1

13. Drying ovens	3
14. Sample collecting trays and sample containers	10
15. 150mm cube moulds	30
16. 150mm cylindrical moulds	30
17. Balances	2 of each
18. Vicat apparatus	2
19. Thermometers	5 of each
20. Cement liness test apparatus	2
21. Measuring cylinders	5
22. Soil hydrometers	5
23. Crucibles, spatulas, filter papers funnel and verniercalipers	Assorted
24. Dessicators	6
25. Curing tank	
26. Stop watches	10
27. Beam moulds	4
28. Crushing machine	1

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