

NATIONAL BOARD FOR TECHNICAL EDUCATION

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

NATIONAL DIPLOMA (ND)

IN

URBAN AND REGIONAL PLANNING

CURRICULUM AND COURSE SPECIFICATIONS

SEPTEMBER 2002

NATIONAL DIPLOMA (ND) AND HIGHER NATIONAL DIPLOMA (HND) IN URBAN AND REGIONAL PLANNING

GENERAL INFORMATION

INTRODUCTION

One of the major features of contemporary urbanization in Nigeria, as elsewhere in the developing world, is the incidence of Urban sprawl and other forms of disorderly development. The city has continued to expand rather rapidly from the core into the surrounding countryside. Modern transportation and communication have encouraged the rapid spread of low-density development, so that sharp boundaries between city and countryside may not exist within the foreseeable future. With more and more rural dwellers migrating to the urban centers in search of jobs that are in very short supply, the overall pressure on urban land and social amenities and services is on the increase.

The need to create more liveable and balanced environment, which will be sustainable in both urban and rural areas where people can work, relax, feel safe and secure calls for serious planning efforts at the national, state and local levels. These efforts cannot crystallize into meaningful results without adequately trained manpower of various cadre, technicians, technologies and professionals.

The ND and HND programmes in Urban and Regional Planning (URP) are conceived as part of the effort to produce the technician and technologist categories of the nation's manpower requirements for solving the problems identified above.

NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING

Goals and Objectives

The programme is designed to produce technician manpower in urban and regional planning, capable of assisting professional planners in their duties. Specifically, the products of the programme should be able to:

- (a) understand the nature and purpose of physical planning at the national, regional, state and local levels;
- (b) understand the form and structure of urban and rural settlements for sustainable development
- (c) understand the nature and scale of urban and rural problems and the planning approaches to their solutions;
- (d) appreciate the elementary social, economic and legal basis of planning;
- (e) demonstrate a working ability in verbal, written and design communication.

Admission Requirements of the Programme

Candidates who desire to be admitted into the programme should possess:

- (a) Four GCE 'O' Level or WASC or SSSC/NECO or NTC/ANTC with credit passes in relevant subjects to the programme, i.e., Mathematics, and English Language, one subject from the followings: Economics, Geography, Technical Drawing, Statistics and one Science subject from Chemistry, Physics, Biology/Agricultural Science, Fine Art;
- (b) Four credit passes in relevant subjects obtained at the final examination of an NBTE recognized Preliminary ND programme offered in a Polytechnic or similar post-secondary Technical Institution on a foundation of four passes in subjects relevant to the programme.

Programme Structure

The National Diploma in Urban and Regional Planning is a two-year programme of four semesters, each of 15 weeks duration. A minimum of 4 months of Supervised Industrial Work Experience Scheme (SIWES) is required at the end of the first year ND I.

First Year

First Semester (In College)

Second Semester (In College)

Compulsory: Supervised Industrial Work Experience Scheme (SIWES)

Second Year

First Semester (In College)

Second Semester (In College)

Graduation.

ACCREDITATION OF THE PROGRAMMES

For the programme to qualify for the award of National Diploma (ND) and Higher National Diploma (HND), the programme should have been accredited by the National Board for Technical Education.

FINAL YEAR PROJECT

Final year students of ND and HND levels of the programme are expected to carry out a project work, which could be on individual basis or group work. The project should as much as possible be something that can be put to use or marketable. Project reports should be well presented and properly supervised. The departments should make their own arrangement of schedules for project work.

Higher National Diploma In Urban and Regional Planning

Goal and Objectives: The Programme is designed to produce technologist in Urban and Regional Planning, capable of assisting professional Planners.

On completion of this programme, the products of the programme should be able to:

- a) Understand the nature and purpose of physical planning at the national, regional state and local levels;
- b) Understand the role of physical planning in national development;
- c) Understand the general social, economic, political and legal basis of physical planning in Nigeria;
- d) Understand physical planning and identify and analyze problems to the solutions;
- e) Assist in the preparation development plans;
- f) Prepare technical reports of various types and on various planning issues;
- g) Prepare students in the use of information technology;
- h) Advise planning policy and decision makers on sustainable development.

Higher National Diploma Programme

The general entry requirements for HND programme include:

- a) all the requirements for admission into the ND programme as stated above;
- b) a minimum of lower credit pass (CGPA 2.50 and above) in the cognate ND examination in Urban and Regional Planning; and a minimum of one year cognate work experience.

In exceptional cases, ND diplomates with a pass (CGPA of 2.00 – 2.49) in the ND examination that had two or more years of cognate experience in the specific field may be considered for admission into the HND programme.

Curriculum

The curriculum of all ND and HND programmes consists of four main components. These are:

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

The General Education components shall include courses in:

Art and Humanities	-	English Language, Communication, History, These are compulsory.
Mathematics and Science	-	(for non-science based programmes)
Social Studies	-	Citizenship (the Nigerian Constitution) Political Science, Sociology, Philosophy, Geography, Entrepreneurship, Philosophy of Science and Sociology are compulsory.

Physical and Health Education (one semester credit only).

The General Education component shall account for not more than 15% of total contact hours for the programme.

Foundation Courses include courses in Economics, Mathematics, Pure sciences, technical drawing, statistics, etc. The number of hours will vary with the programme and may account for about 10 – 15% of the total contact hours.

Professional Courses are courses, which give the student the theory, and practical skills he needs to practice his field of calling at the technicians/technologist level. These may account for between 60 – 70% of the contact hours depending on programme.

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 8.0.

Curriculum Structure

ND Programme

The structure of the ND programme consists of four semesters of classroom, laboratory studio 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. recitation, practical exercises, quizzes, test; and
2 weeks for examinations and registration.

SIWES shall take place at the end of the second semester of the first year and would attract 4 Credit Units on completion.

HND Programme

The structure of the programme is similar to the ND save that the SIWES at the end of the first year is not compulsory.

Each programme offered at the ND or HND level shall be accredited by the NBTE before the diplomas can be awarded either of the two diploma certificates. Details about the process of accrediting a programme for the award of the ND or HND are available from the Executive Secretary, National Board for Technical Education, Plot B, Bida Road, P.M.B. 2239, Kaduna, Nigeria.

Conditions for the award of the ND/HND

Institutions offering accredited programmes will award the National Diploma to candidates who successfully completed the programme after passing prescribed coursework, examinations, diploma project and the supervised industrial work experience. Such candidates should have completed a minimum of between 72 and 80 semester credit units depending on the programme.

Guidance Notes for Teachers Teaching the Programme

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. In designing the units, the principle of the modular system by product has been adopted; thus making each of the professional modules, when completed provides the student with technical skills, which can be used for employment purposes.

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 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 on 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 programmes offered throughout the polytechnic system.

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 in the ratio of 60.40.

EVALUATION OF THE STUDENTS FOR THE AWARD

Conditions for the award of diploma should be based on the following:

- i) Satisfactory performance in prescribed coursework which may include class work, tests, quizzes, workshop practice, laboratory work;
- ii) Satisfactory performance in Supervised Industrial Work Experience for four months and must have earned 4 Credit Units (ND only);
- iii) Satisfactory performance at all semester examinations;
- iv) Satisfactory completion of final year project work.

Normally, continuous assessment contributes 30%, industrial training 5%, project work 5% while semester examinations are weighed 60% to make a total of 100%.

Diploma should be awarded in four classes for both ND and HND levels of the programme.

- | | | | |
|------|--------------|---|------------------------|
| i) | Distinction | - | CGPA of 3.50 and above |
| ii) | Upper Credit | - | CGPA of 3.00 – 3.49 |
| iii) | Lower Credit | - | CGPA of 2.50 – 2.99 |
| iv) | Pass | - | CGPA of 2.00 – 2.49 |

GUIDELINES ON SIWES PROGRAMME

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

Responsibility for Placement of Students

- a) Institution 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, Jos.
- b) The Placement Officer should discuss and agree with industry on the following:-
 - i) a task inventory of 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.
 - ii) the industry based supervisor of the student during the period, likewise the institution based supervisor.
 - iii) 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.

Evaluation of Students During the SIWES

In the evaluation of the student, cognizance should be taken of the following items:

- a) Punctuality
- b) Attendance
- c) General Attitude to Work

- d) Respect for Authority
- e) Interest in the field/technical area
- f) Technical competence as a potential technician in his field.

GRADING OF SIWES

To ensure uniformity of grading scales, the institution should ensure that the uniform grading of students' work, which has been agreed to by all polytechnics, is adopted.

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.

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 visits; and
- 2) a final visit in the last month of the attachment.

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 the NBTE.

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. Failure in the SIWES is an indication that the student has not shown sufficient interest in the field or has no potential to become a skilled technician in his field. The SIWES should be graded on a fail or pass basis. Where a student has satisfied all other requirements but failed SIWES, he may only be allowed to repeat another four months SIWES at his own expense.

National Board for Technical Education,
Kaduna.

24 July, 2000.

URBAN AND REGIONAL PLANNING PROGRAMME

FIRST SEMESTER
 ND I FIRST YEAR
 NATIONAL DIPLOMA (ND)

Course	Course	L	T	P	CU	CH	Pre-requisite
GNS 101	Use of English	2	-	-	2	2	SSCE
GNS 120	Contemporary Social Problems and Outline History of Nigeria	2	-	-	2	2	SSCE
MTH 111	Mathematics	1	1	-	2	2	SSCE
MEC 101	Technical Drawing	1	-	3	2	4	SSCE
URP 113	Introduction to Nigerian Law	1	-	3	2	4	SSCE
SUG 101	Basic Land Surveying I	2	-	3	3	5	SSCE
URP 115	History of Town Planning	2	-	-	2	2	SSCE
URP 117	Urban Planning Principles and Tech.	1	-	3	2	4	SSCE
URP 119	Geography and Planning	1	-	3	2	4	SSCE
PHE	Physical & Health Education	1	-	3	1	4	SSCE
		14	1	18	20	33	

URBAN AND REGIONAL PLANNING PROGRAMME

ND 1 SECOND SEMESTER
NATIONAL DIPLOMA (ND)

Course	Course	L	T	P	CU	CH	Pre-requisite
GNS 102	Communication in English I	2	-	-	2	2	GNS
GNS 121	Introduction to Sociology	2	-	-	2	2	-
SUG 102	Basic Land Surveying II	2	-	3	2	5	SUG 101
STA 111	Introduction to Statistics	1	1	-	2	2	MTH 111
URP 122	Environmental Science and Ecology	2	-	-	2	2	-
URP 124	Urban Planning Law & Admin. I	2	-	-	2	2	-
URP 126	Graphics Planning	1	-	3	2	4	MEC 101
URP 128	Urban Planning Principles and Tech. II	1	-	3	2	4	URP 117
URP 130	Studio I – Neighborhood Design	1	-	6	3	7	-
		14	1	15	20	30	

URBAN AND REGIONAL PLANNING PROGRAMME

NATIONAL DIPLOMA (ND) II
FIRST SEMESTER

Course Code	Course	L	T	P	CU	CH	Pre-requisite
GNS 201	Use of English II	2	-	-	2	2	GNS 102
GNS 125	Economics	2	-	-	2	2	-
URP 211	Building Design and Construction I	1	-	6	3	7	-
URP 213	Urban and Rural Sociology	2	-	-	2	2	-
URP 215	Housing I	1	-	3	2	4	-
URP 217	Transportation Planning I	1	-	3	2	4	-
URP 219	Sustainable Human Settlement I	2	-	-	2	2	-
URP 221	Computer Appreciation	1	-	3	2	4	-
URP 223	Studio II- Residential Layout Design	1	-	6	3	7	URP 130
		13	-	21	20	34	

URBAN AND REGIONAL PLANNING PROGRAMME

NATIONAL DIPLOMA (ND) II
SECOND SEMESTER

Course	Course	L	T	P	CU	CH	Pre-requisite
GNS 202	Communication in English II	2	-	-	2	2	GNS 201
URP 220	Urban Economics	2	-	-	2	2	
URP 222	Building Design & Construction II	1	-	6	3	7	URP 211
URP 224	Infrastructure Planning	1	-	3	2	4	-
URP 226	Population Studies	1	-	-	2	1	-
URP 228	Urban Planning Law & Admin II	2	-	-	2	2	-
URP 230	Land Use Planning	2	-	3	3	5	URP 124
URP 232	Studio III – Development Planning	1	-	6	3	7	
URP 234	Terminal Project	1	1	-	2	2	
		13	1	18	21	32	

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING.			
COURSE: INTRODUCTION TO NIGERIA LAW		Course Code: URP 113	Contact Hours: 1 – 0 - 3
Course Specification: Theoretical Content:			
Week 1 – 2	General Objective: To enable students understand Nigerian Law for daily operations		
	Special Learning Objective	Teachers Activities	Learning Resources
	1.0 Sources of Nigerian Law 1.1 Define law 1.2 Discuss the importance of law . 1.3 Explain the sources of Nigeria Law i.e. constitution of FRN (a) English law (b) Customary law (c) Statutory law (d) Case law etc. 1.4 Distinguish between the various law.	<ul style="list-style-type: none"> • Explain and define law, its importance, sources of Nigerian law, distinguish between them 	Relevant textbooks on Nigerian law and legal systems.

<p>3 - 4</p>	<p>2.0 Types of Law 2.1 Identify the various types of Nigeria laws. 2.2 Differentiate the types of law i.e. (a) civil law (b) criminal law (c) torts (d) land law (e) contract act and other laws. 2.3 Relate them to planning problems. 2.4 Evaluate each of the laws.</p>	<ul style="list-style-type: none"> • Identify and explain types of law, relate them to planning problems, evaluate each of the laws identified. 	<p>Make use of available cases from courts.</p>
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	<p>3.0 Structure of Nigerian Legal System</p> <p>3.1 Explain the structure of courts in Nigeria: (a) Supreme Court (b) High Court (c) Customary Courts.</p> <p>3.2 State the jurisdiction of each court on 3.1 above.</p> <p>3.3 Explain the appeal system.</p> <p>3.4 Cite decided cases in relation to planning .</p> <p>Field Trip</p> <p>3.5 Undertake visits to courts and tribunals.</p> <p>3.6 Carry out case studies in selected topics.</p>	<ul style="list-style-type: none"> • Explain the structure of courts in Nigeria, their hierarchy and the Jurisdiction of each court. • Explain the Appellate court and the appeal system. • Visit to the various courts and watch proceedings, especially on cases relating to planning advocacy. • Cite decided cases of the various courts related to planning and analyse such. • Give assignment to students to cite decided cases and analyse each. • Evaluate their analysis. 	<p>Physical visit to courtrooms and watch proceedings on – going land and planning cases.</p> <p>Make use of Tribunal cases of Nigeria.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: HISTORY OF TOWN PLANNING		Course Code: URP 115	Contact Hours: 2-2
Course Specification			
Theoretical Content			
General Objective: 1.0 History of Urban Planning and Application to Contemporary Physical Planning Practice.			
WEEK	Special Learning Objective	Teachers Activities	Learning Resources
1 – 3	<p>Evolution of Towns and Cities</p> <p>1.1 Discuss the development process of settlements during the stone age, bronze age, etc.</p> <p>1.2 Compare the changes that occurred in each age.</p> <p>1.3 Identify the different forms of settlement patterns during the ages.</p> <p>1.4 Describe the urban planning forms adopted by the Greeks, Romans and Egyptians.</p> <p>1.5 Produce a sketch off a comparative plan of the cities adopted.</p> <p>1.6 Draw up values that arise from each form.</p> <p>1.7 Compare urban planning during the Medieval, Renaissance and Baroque Periods.</p> <p>1.8 Compare their planning set up using sketches.</p> <p>1.9 Analysed each in planning set up.</p>	<p>i. Lecturer to explain development process of settlements in the different ages.</p> <p>ii. Discuss different forms of settlement patterns.</p> <p>iii. Compare urban planning during the different periods.</p>	<ul style="list-style-type: none"> • Slides, projector, screen, relevant text books and journals. • Make use of Maps/Books of ancient cities in Nigeria.

4-5	<p>2.0 Human Settlements</p> <p>2.1 Define "Industrialization"</p> <p>2.2 Trace the industrial revolution and its impact on settlement patterns.</p> <p>2.3 Link industrial revolution to the modern town planning.</p> <p>2.4 Appraise Human Settlements in the stat of operation.</p>	<p>i. Explain the evolution of industrial and contemporary humans settlements.</p> <p>ii. Give assignment on the link between Industrial revolution and modern town planning.</p>	<ul style="list-style-type: none"> • Relevant textbooks
6	<p>3.0 Significance of Historical Knowledge of Cities</p> <p>3.1 Explain the importance of historical knowledge in planning our cities and villages.</p> <p>3.2 Describe the use of historical facts in policy formation.</p>	<p>i. Lecturer to explain the importance of historical knowledge in planning our cities.</p>	<ul style="list-style-type: none"> • Relevant textbooks

7-8	<p>4.0 Contemporary Planning Ideas</p> <p>4.1 Explain the effects of the philanthropic Movements on urban planning, public health laws, garden city development etc.</p> <p>4.2 Appraise each movement to the Nigerian Context.</p> <p>4.3 Explain the concepts postulated by Howard, Stin, Mum ford, Corbusier and other.</p> <p>4.4 Describe the effects of the concepts mentioned in 4.3 on urban and country Planning in Nigeria.</p> <p>4.5 Relate these concepts to solving some planning in the state of operation.</p>	<p>i. Explain contemporary planning ideas and appraise in relation to the Nigerian context.</p> <p>ii. Give assignment on how these can be applied to solving some planning problems.</p>	<ul style="list-style-type: none"> • Use specific Textbook of History Urban Planning in Nigeria.
9	<p>5.0 History of Physical Planning in Nigeria</p> <p>5.1 Trace the historical development of physical planning in Nigeria from 1863 to date.</p> <p>5.2 Discuss the birth and functions of NITP and TOPREC.</p>	<p>i. Lecturer to explain history of Urban Planning in Nigeria from 1863 – Date.</p> <p>ii. The functions of both NITP and TOPREC to be explained.</p>	<ul style="list-style-type: none"> • Relevant textbooks, 1946 Town and Country Planning Law, Decree 88 of 1992, TOPREC Decree No 3 of 1988, NITP Constitution and other relevant publications.
10-12	<p>6.0 Historical Towns</p> <p>6.1 Outline the origin and concept of some selected Nigeria settlement.</p> <p>6.2 Trace the settlement pattern and administration of some selected traditional towns in Nigeria.</p> <p>6.3 Differentiate between each settlement.</p> <p>6.4 Carry out case studies of some Historical Town(s) in the state of operation.</p>	<p>i. Explain the concept and origin of some historical towns in Nigeria.</p> <p>ii. Discuss the pattern and administration of some selected traditional towns.</p> <p>iii. Give assignment on case studies of some of these towns.</p> <p>iv. Give assignment on how each town has solved a particular urban planning problem.</p>	<ul style="list-style-type: none"> • Books, existing reports and town plans.

	<p>Field Trip 6.5 Undertake visits to historical and contemporary cities. 6.6 Carry out a comparison exercise in selected.</p>	<p>i. Give examples of Historical and Contemporary cities. ii. Ask students to make comparative studies of Historical and Contemporary cities in groups.</p>	<ul style="list-style-type: none"> • Use the library and make selections of literature.
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: URBAN PLANNING PRINCIPLES & TECH. I		Course Code: URP 117	Contact Hours 1 – 3 - 2
Course Specification:			
Theoretical Content:			
Week	Goal: Basic Planning Principles, Techniques and how it can solve physical Planning problems.		
		Teachers Activities	Learning Resources
1	1.0 Objectives of Urban and Regional Planning 1.1 Defined Urban and Regional Planning. 1.2 Explain why there is the need to plan. 1.3 Analyse the scope of Urban and Regional Planning 1.4 Outline the physical planning process.	i. Explain Urban and Regional Planning, adduce reasons for it and discuss its scope. ii. Explain the planning process and state how the public can be made to participate.	Books, journals and other relevant materials.
2-3	2.0 Urban and Regional Planning Theory 2.1 Appreciate Urban theories that have been evolved over a long time (e.g. Greeks, Romans, Egyptians, etc.) 2.2 Explain concepts postulated by Geddes, Corbusier, Perry, Mumford, Howard, etc.) 2.3 State the impact of the concepts mentioned in 2.2 on contemporary planning philosophy. 2.2 Explain the different types of planning.	i. Explain planning theories over time and the concepts as postulated by reformers. ii. Explain the different types of planning.	Books, journals and other relevant materials.
	3.0 Basic Form of Survey for Planning Studies 3.1 Distinguish between ‘data’ and ‘information’. 3.2 Explain the types of survey for planning activities.	i. Lecturer should use real life examples to explain data	Vehicles, Books and Journals.

<p>10-11</p>	<p>6.1 Relate Planning to the planning of theories to central area, recreational areas, etc.</p> <p>6.2 Undertake the detailed planning of central areas, shopping centers industrial areas, recreational areas, etc.</p> <p>6.3 Present each of the plans to audience for critique.</p>	<p>i. Explain the link between planning theories and practice.</p> <p>ii. Give assignment on detailed planning of some uses and present for critique.</p>	<p>Vehicles, laptops projector, Screen.</p>
<p>12</p>	<p>7.0 Principles and Techniques of Urban Renewal.</p> <p>7.1 Explain the terms, ‘Urban renewal’ ‘Urban blight’ and ‘treatment areas’.</p> <p>7.2 Identify problems association with slums such as physical, social economic, administrative, aesthetic, etc.</p> <p>7.3 Explain the methods/strategies available for central area renewal and non-residential renewal- redevelopment, rehabilitation, conservation, etc.</p>	<p>i. Explain the principles and techniques of Urban renewal.</p> <p>ii. Explain the various terms, methods and strategies.</p> <p>iii. Arrange a field trip to some derelict sites.</p>	<p>Vehicles, camera, laptops, projector screen.</p>

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: GEOGRAPHY AND PLANNING		Course Code: URP 119	Contact Hours: 1-0-3
Course Specification			
Theoretical Content			
General Objective: To enable students know the relationship between Geography and Urban/Regional Planning			
WEEK	Special Learning Objective	Teachers Activities	Learning Resources
1	1.0 Geography and its Components 1.1 Define Geography 1.2 List the components of Geography (e.g. human, physical, hydrology), etc 1.3 Determine the relevance of each of the components	i. Explain and discuss what Geography is, the components of Geography. ii. Differentiate between Geographer and professional physical planner and the interface, determine the relevance of Geography to physical planning.	<ul style="list-style-type: none"> Relevant Geography and Urban/Regional Planning textbooks.
2	2.0 Types of Rocks and Soils 2.1 List the type of rocks. 2.2 Determine the effects of rocks on human settlement and the activities. 2.3 List the types of soils. 2.4 Describe the formation of the various soil types. 2.5 Analyze the effect of soils on human settlements and activities. 2.6 Evaluate the relationship between rocks and soils. 2.7 Carry out simple tests for each of them for planning purposes.	i. Identify and explain the different types of rocks, their effects on human settlement and their activities, types of soils and their formations, their effects on human settlements and activities, relationship between rocks and soils, carry out simple soil tests for planning purpose.	<ul style="list-style-type: none"> Field trip to sites and scenery of relevance to the course.

3	<p>3.0 Mineral Resources</p> <p>3.1 List the main types of minerals found in Nigeria.</p> <p>3.2 Describe the occurrence and distribution of the minerals.</p> <p>3.3 Analyze the effect of soil upon settlements and activities.</p>	<p>i. Identify and explain various types of minerals found in Nigeria, their occurrence and distribution.</p>	<ul style="list-style-type: none"> • The Lecturer must be a qualified Professional Physical Planner.
4-5	<p>4.0 Land Forms</p> <p>4.1 State the major and forms i.e. lake, valley, mountain, plain, etc.</p> <p>4.2 Explain their formations.</p> <p>4.3 Analyze their effects on human settlement and activities in planning.</p> <p>4.4 Relate land forms to Urban Planning practice.</p>	<p>i. Identify and explain major landforms and its attributes/constraints to land use planning and design.</p> <p>ii. Prepare a layout/site plan of various land forms in a given area.</p>	<ul style="list-style-type: none"> • Use Physical biography maps.
6-7	<p>5.0 Climate and Vegetation</p> <p>5.1 List types of climate and vegetation in Nigeria.</p> <p>5.2 Describe their occurrence and distribution.</p> <p>5.3 Analyze the effects of 1 & 2 on human settlement and activities.</p> <p>5.4 Apply climate and vegetation to Urban Planning practice.</p> <p>5.5 Prepare a layout and site climate and vegetation locations of a given area.</p>	<p>i. Teach weather, climate, vegetation and their occurrences, distribution.</p> <p>ii. The concept of climate change and the effects on human settlements; the effect of human settlement activities on climate.</p> <p>iii. Prepare a layout climatic and vegetational locations of a given area.</p>	<ul style="list-style-type: none"> • Use Base Maps

8-9	<p>6.0 Population and Economic Activities</p> <p>6.1 Describe the size and distribution of population in Nigeria.</p> <p>6.2 Identify the factors that influence the distribution of population.</p> <p>6.3 Estimate the effects of population upon economic activities and development in Nigeria.</p> <p>6.4 Sketch their distribution on a layout of an area in terms of High, Medium and Low Densities.</p> <p>6.5 Apply population and Economic activities to planning.</p>	<p>i. Explain population, the distribution size, distribution its effects and relationship in it economic activities and physical planning.</p>	<ul style="list-style-type: none"> • Use Demographic Maps
10-12	<p>7.0 Elements of Map Reading</p> <p>7.1 Identify major features on a map.</p> <p>7.2 Interpret the features above.</p> <p>7.3 Discuss different types of scales and conversion.</p> <p>7.4 Discuss the concepts of intervisibility.</p> <p>7.5 Prepare a intervisibility of a given topographical map.</p>	<p>i. Explain and interpret the major features on a Map, discuss different types of scales and conversion, concepts of intervisibility, measuring of distances, gradients, area measurement using gria etc.</p> <p>ii. Prepare gradient, cross section and intervisibility of a topographical map.</p>	<ul style="list-style-type: none"> • Map reading • Textbook and exercises

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: BASIC LAND SURVEYING II		Course Code: SUG 102	Contact Hours: 2--2
Course Specification			
Theoretical Content			
	General Objective: Understand/Principles And Methods Of Land Surveying		
WEEK	Special Learning Objective	Teachers Activities	Learning Resources
1 – 3	<p>1.0 Distance Measurement</p> <p>1.1 Observe small vertical angles precisely by repletion.</p> <p>1.2 Determine horizontal distance using vertical stage and tachometer.</p> <p>1.3 Explain the special characteristic and use of self reducing tachometers.</p> <p>1.4 Measure distance using a theodolite as tachometer</p> <p>1.5 Determine spot-heights and survey details by Tachometry.</p> <p>1.6 Measure distance EDM and total station.</p> <p>1.7 Work out accuracies attainable in various methods of Electromagnet distance measurement (EDM)</p>	<p>i. Explain various survey instrument used in distance measurement.</p> <p>ii. Carry out measurement of distance with various equipments.</p> <p>iii. Give exercises.</p>	<p>Survey equipments books and Journals, EDM, Theodolite, chain, tachometer.</p>

	<p>3.0 Minor Triangulation</p> <p>3.1 Explain the basic principle of triangulation.</p> <p>3.2 Enumerates other parameters of triangulation such as selection, beaconing, numbering of triangulation such as selection, beaconing, numbering of triangulation stations, baseline, azimuth determination, extension, reciprocal observations, angular misclosures, field measurement checks etc.</p> <p>3.3 Explain methods of computing coordinates and heights from field records.</p> <p>3.4 Carry out minor triangulation in area of 100sq.m.</p> <p>3.5 Carry out GPS observation on the triangulation stations in 3.4 above.</p> <p>3.6 Identify the relative merits and demerits of triangulation and GPS method.</p>	<p>i. Explain the principles and field methods and calculation procedure for minor triangulation.</p> <p>ii. Give student exercises on GPS etc.</p>	<ul style="list-style-type: none"> ▪ Books & Journals, GPS
9	<p>4.0 Tertiary Leveling</p> <p>4.1 Describe the basic principles of ordinary spirit leveling and digital spirit leveling.</p> <p>4.2 List the specifications of tertiary leveling.</p> <p>4.3 Explain the (optimum) observing procedure.</p> <p>4.4 Describe the use of and criteria for selection of leveling datum.</p> <p>4.5 Adjust collimation error in level.</p> <p>4.6 Describe the construction and use of semi permanent and permanent tertiary bench marks.</p> <p>4.7 Book field observations.</p> <p>4.8 Reduce level.</p> <p>4.9 Explain arithmetical checks in level reduction.</p> <p>4.10 Carry out tertiary leveling, reduction and adjustment to produce elevation of all permanent stations along a circuit of about</p>	<p>i. Explain methods of heighting and tertiary leveling.</p> <p>ii. Give assignment on leveling.</p>	<ul style="list-style-type: none"> ▪ Leveling equipment, field books. ▪ Leveling textbooks and field books.

	2km, using ordinary and digital levels. 4.11 Enumerate the use of tertiary leveling.		
10-12	5.0 Contoured Plans 5.1 Name the different reference directions describing method of determining these and their mutual relationships. 5.2 Explain basic need for heights in topographical, Engineering and Township surveys. 5.3 Illustrate optimum distribution of spot heights for contouring at 0.5m vertical intervals from a mesh of spot heights.	i. Explain the principles and practice of contour map production. ii. Explain setting out. iii. Give assignment.	<ul style="list-style-type: none"> ▪ Use leveling equipment
	6.0 Setting Out for Construction 6.1 Identify the equipment required to setout 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 excavation and foundation levels. 6.5 Identify the instrument used for taking internal and external dimensions. 6.6 Determine the areas of a building and its site. 6.7 Explain how running internal external measurements are taken horizontally and vertically. 6.8 State the procedure for checking verticality of building using Theodolite, Optical plumb, and Plumb-Bulb. 6.9 Describe the invert of a drain, a sight rail and a traveler. 6.10 Calculate suitable length of a traveler and	<ul style="list-style-type: none"> • Taps/Theodolites 	<ul style="list-style-type: none"> • Use leveling equipment

	<p>reduce levels of sight rails from give drawings.</p> <p>6.11 Establish sight rails for horizontal and depth control of a straight drain between manholes.</p> <p>6.12 Explain the survey terms used in road construction.</p> <p>6.13 Describe methods of route surveys.</p> <p>6.14 Describe the types of control used for embankments, cutting of cut and fill on a given straight road with transverse sloping ground.</p>		
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING.			
COURSE: Environmental Sciences & Ecology		Course Code: URP 122	Contact Hours: 2-0-0
Course Specification:			
Theoretical Content:			
Week 1-2	General Objective: Understand principles and methods of Environmental		
	Special Learning Objective	Teachers Activities	Learning Resources
	1.0 Ecosystems 1.1 Define the Ecosystem. 1.2 Explain the relevance of Ecosystem to physical planning. 1.3 Apply the concept of Ecosystem to physical planning issues.	i. Explain the general principles of Ecosystem and relevance to physical planning. ii. Visit a site	Text books, Journals Vehicle, camera, maps and slide/films.

<p>3-5</p>	<p>2.0 Objectives of Environmental Conservation.</p> <p>2.1 Explain the term “Environmental Conservation”.</p> <p>2.2 State the objectives of Environmental Conservation.</p> <p>2.3 Examine Environmental Conservation Laws in your state of operation.</p> <p>2.4 Propose appropriate environmental conservation laws in your state of operation.</p> <p>2.5 Identify Environmental techniques.</p>	<p>i. Define and Explain nature, concepts of Environmental conservation.</p> <p>ii. Explain relevant Environmental Laws and their provisions.</p> <p>iii. Explain the various environmental techniques.</p> <p>iv. Give exercise.</p>	<p>Textbooks, Journals</p> <p>Environmental Law/Textbooks and cases.</p>
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	<p>3.0 Types of Environmental Pollution and their Effects.</p> <p>3.1 Define the term “pollution and pollutant”.</p> <p>3.2 Differentiate between pollution and pollutant.</p> <p>3.3 Identify the main types of pollution and pollutant.</p> <p>3.4 Differentiate between particulate matters and gasses pollutants.</p> <p>3.5 Describe the origins e.g. (natural and man made) of the main types of pollutants.</p> <p>3.6 Explain the effects of each types of pollution on human and physical environs.</p> <p>3.7 Propose environmental pollution policies for your state of operation.</p>	<p>i. Define pollution and pollutant.</p> <p>ii. Explain various aspects of pollutants, pollution including types ,and effects on environment.</p> <p>iii. Explain the legal provisions for pollution control.</p>	<ul style="list-style-type: none"> - Use Encyclopedia (any). - Books on pollutions. - Environmental textbooks and law books.
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	<p>4.0 Natural Resources for Man</p> <p>4.1 Define the natural resource.</p> <p>4.2 List the main natural resources e.g. water, flora and fauna surface land and mineral etc.</p> <p>4.3 Explain the usefulness of natural resources.</p> <p>5.0 Environmental Hazards</p> <p>5.1 Describe the main types of environmental hazards such as flood, soil erosion, tropical rain storm, etc.</p> <p>5.2 Explain the role of human climate, in the occurrence of identified environmental hazards.</p> <p>5.3 Develop policies against environmental hazards in the state of operation.</p> <p>Field Trip</p> <p>5.4 Undertake visits to Ministries of Environment, Agric., Forestry, and Federal Conservation Commission.</p> <p>5.5 Participate in their roles on selected topics.</p>	<p>ii. Define and Explain various natural resources.</p> <p>iii. Explain usefulness of natural resources to man and development.</p> <p>i. Explain the various types of environmental hazards.</p> <p>ii. Explain role of human activities to environmental hazards.</p> <p>iii. Explain process of developing policies against environmental hazards.</p> <p>iv. Undertake field trip.</p> <p>v. Give assignment.</p>	<p>- Conference papers.</p> <p>- Textbooks, Journals.</p> <p>- Environmental Books.</p> <p>- Vehicle/Camera.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING.			
COURSE: GRAPHICS IN PLANNING		Course Code: URP 126	Contact Hours: 1- 0 -3
Course Specification:			
Theoretical Content:			
Week	General Objective: Understand Techniques for draughtmanship and rendition of designs		
	Special Learning Objective	Teachers Activities	Learning Resources
1 - 2	<p>1.0 Basic Materials</p> <p>1.1 Outline basic materials/tools and their functions.</p> <p>1.2 Illustrate have materials/tools outline in 1.1 above.</p> <p>1.3 Maintain the materials/tools outlined in 1.1 above.</p>	<p>i. Explain the basic materials and tools for draughtmanship and rendition of maps.</p> <p>ii. Demonstrate use of the tools and techniques.</p> <p>iii. Explain how to maintain these equipment.</p> <p>iv. Give assignment.</p>	<p>Textbooks, journal drafting tools, Past rendered work.</p>
3-4	<p>2.0 Techniques of Line Drawing</p> <p>2.1 Illustrate in the conventional conventional lines, broken lines, etc.</p> <p>2.2 Draw accurately, horizontal line, vertical lines, parallel lines and angular line.</p>	<p>i. Explain the nature, types and character of line drawings.</p> <p>ii. Give exercises.</p>	<p>Textbooks, journals</p> <p>-ditto-</p>

<p>5 - 6</p>	<p>3.0 Rendition</p> <p>3.1 Explain the significance of rendering maps and planning designs.</p> <p>3.2 Differentiate between light and hold hatching.</p> <p>3.3 Apply hatching techniques to various design components such as ground cover, roof cover, water bodies, etc.</p> <p>3.4 Identify the primary colours.</p> <p>3.5 Produce secondary colours by combining two or more primary colours.</p>	<p>i. Give an overview of the significance of rendering in maps and planning designs.</p> <p>ii. Clarify various tools and techniques used for rendering.</p> <p>iii. Illustrate with examples.</p> <p>iv. Give assignment</p>	<p>Rendering tools and paper. Previous samples.</p>
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<p>7-8</p>	<p>3.6 Identify colour patterns used for different land uses and design components.</p> <p>3.7 State the various media for colour production such as crayon, water colour, poster colour, pencils, etc. and demonstrate how they are used.</p> <p>3.8 Identify various spraying instruments such as mechanical sprayer, brush, etc.</p> <p>3.9 Apply spraying techniques to design components such as roads, ground cover, etc.</p> <p>3.10 Explain the principles of shadow casting and apply to a chosen object.</p> <p>3.11 Outline the various tonal effect in shading.</p> <p>3.13 Carry out exercises in shading, demonstrating, shadow casting by roof, projecting, vertical surfaces, curvilinear surfaces, etc.</p>	<p>Display types of colours and demonstrate how they are use effectively</p>	<p>Use Drawing instruments, and colour affect.</p>
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	<p>4.0 Lettering</p> <p>4.1 Describe different characters, styles and sizes of letters.</p> <p>4.2 Demonstrate the qualities of good lettering e.g. straightness, uniformity, regularity in spacing, neatness, etc.</p> <p>4.3 Carry out simple lettering exercises.</p>	<p>i. Explain the various styles, types, sizes and character of lettering.</p> <p>ii. Demonstrate some examples.</p> <p>iii. Give assignment.</p>	<p>Textbooks, Journal lettering set, paper.</p>
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	<p>5.0 Graphic Symbols</p> <p>5.1 Identify various graphics symbols used in urban planning designs, e.g. trees and shrubs, traffic symbols, landform, water bodies, etc.</p> <p>5.2 Carry out simple exercises demonstrating how graphics symbols are used.</p> <p>6.0 Free Hand Sketching</p> <p>6.1 Identify the various techniques in free hand sketching.</p> <p>6.2 Explain visual equilibrium scale, proportion, symmetry, balance and rhythm as tools for free hand sketching.</p> <p>6.3 Carry out exercises in still and live free hand sketching.</p> <p>7.0 Three Dimensional</p> <p>7.1 Differentiate between perspective and axonometric drawings.</p> <p>7.2 Demonstrate the one point, two point and three point perspective of simple geometric figures.</p> <p>7.3 Demonstrate the 45⁰ – 45⁰ and the 30⁰ - 60⁰ axiomatic drawings simple geometric figures</p>	<p>i) Explain various graphic symbols and colours used in urban planning design.</p> <p>ii) Give exercises</p> <p>i. Explain various techniques in free hand sketching</p> <p>ii. Explain various urban design language used in free hand sketching.</p> <p>iii. Differentiate the various principles of three dimensional drawings.</p> <p>iv. Give assignment.</p>	<p>Textbooks and journals and books with graphic symbols</p> <p>Books on free hand sketching</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: URBAN PLANNING PRINCIPLES II		Course Code URP 128	Contact Hours: 1 – 0 – 3
Course Specification:			
cal Content:			
Week	General Objective Understanding Planning Principles and Techniques and their Application in Physical Planning		
	Special Learning Objective		
	<p>1.0 New Town</p> <p>1.1 Explain the phenomena of Urban sprawls and sub-urban development.</p> <p>1.2 Explain the basic issues in the location of new towns</p> <p>1.3 Distinguish between satellite towns and new towns.</p> <p>1.4 State the physical planning and design principles in the development of new towns.</p> <p>1.5 Distinguish between towns , cites, conurbation and metropolis. Prepare a new town planning in your area of operation</p> <p>2.0 Concept of Regional Planning</p> <p>2.1 Describe the concept of a regional.</p> <p>2.3 Undertake the delineation of region, and different types of regions.</p> <p>2.4 Define regional Planning.</p> <p>2.5 Explain the inter-relationship of national, regional and local plans.</p>	<p>(i) Explain the phenomena of Urban sprawl and sub-urban development.</p> <p>(ii) Explain issues related to location, design and development of new towns and satellite towns.</p> <p>(iii) Explain preparation of new town plan.</p> <p>(iv) Give assignment.</p> <p>(i) Explain the nature character and concept of a Regional</p> <p>(ii) Explain various concept in Regional planning</p>	<p>- Text books, Journals</p> <p>- Urban design criteria or Books on Urban and Planning Standard.</p> <p>- Text books, Journals</p> <p>- Urban design criteria or Books on Urban and Planning Standard.</p>

	<p>1.0 Techniques of Rural Planning</p> <p>3.1 Define ‘rural’ area and ‘rural planning’ and ‘rural integration’.</p> <p>3.2 Identify the problems of rural- urban migration.</p> <p>3.3 Explain the principles of village planning.</p> <p>3.4 Outline Nigerian example of village planning</p>	<p>(i) Define the various terms rural area, Rural planning rural integration.</p> <p>(ii) Explain the problems of urban migration and principles of village planning using example.</p>	<p>- Text books, Journals</p> <p>- Urban design criteria or Books on Urban and Planning Standard.</p>
7-8	<p>2.0 Strategic for Urbanization</p> <p>4.1 Define “urbanization”.</p> <p>4.2 Relate the two strategies of concentration and dispersal.</p> <p>4.3 Appreciate the need for a clear strategy for any for any settlement.</p>	<p>(i) Explain nature and characteristics of Urbanization.</p> <p>(ii) Explain strategies for urban development.</p>	<p>Books on urbanization.</p>

<p>9-10</p>	<p>3.0 Techniques of Plan Implementation</p> <p>5.1 Explain the Resources for plan implementation.</p> <p>5.2 Explain the effect of Resource Availability and Capacity on implementation.</p> <p>5.3 Explain the stimulation of plan implementation.</p> <p>5.5 Outline the factors impeding the effective implementation of plans.</p> <p>6.0 Institutional Frame-work of Planning in Nigeria.</p> <p>6.1 Outline the planning administration in Nigeria at the Federal State and local levels.</p> <p>6.2 Explain the functionaries in physical planning - the politician, the physical planner, related professionals administrators, lawyers and other state holders.</p> <p>6.3 Appraise each function in relation to physical planning process.</p> <p>7.0 Development Control</p> <p>7.1 What is development, development plan and development control?</p> <p>7.2 Differentiate them.</p>	<p>(i) Define nature, process and problems of plan implementation.</p> <p>(ii) Explain the planning administration in Nigeria.</p> <p>(i) Explain the functions of all stakeholders in the planning process.</p> <p>(ii) Give assignment.</p> <p>(i) Define and explain development control.</p> <p>(ii) Explain the nature scope content of development control.</p> <p>(iii) Explain provisions for enforcement control.</p> <p>(iv) Visit FMH in Area of operation.</p>	<p>Books from FMH and workshops literature.</p> <p>Visit FMH in your state of operation.</p> <p>Visit FMH in your state of operation.</p>
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	7.3 Undertake a development control within your state of operation. 7.4 Carryout a simple exercise in selected topics under supervision.	(v) Give exercises.	
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING.			
COURSE: STUDIO- I NEIGHBOURHOOD DESIGN		Course Code: URP 130	Contact Hours: 1 – 0 – 6
Course Specification:			
Theoretical Content:			
Week	General Objective: Understand Residential Community Neighbourhood unit and its planning needs		
	Special Learning Objective	Teachers Activities	Learning Resources
	<p>1.0 Structure of Neighborhood . 1.1 Explain the various elements of a neighborhood e.g. institution, industrial, commercial and residential uses. 1.2 Prepare a land use schedule for a neighborhood unit of a defined population size or area, using space standards employed in neighborhood planning.</p>	<p>(i) Explain various neighborhood elements. (ii) Explain procedure for preparing land use schedule (iii) Give assignment.</p>	<p>Books and Journals/literatures from FMH.</p>

	<p>2.0 Socio-Economics and Physical Survey 2.1 Carry out a reconnaissance survey. 2.2 Prepare a base map 2.3 Design the instrument for survey e.g. questionnaire. 2.4 Determine the sample size. 2.5 Conduct land use and socio-economic survey.</p>	<ul style="list-style-type: none"> (i) Explain how a base map is prepared with examples (ii) Explain various types of surveys (iii) Explain how reconnaissance and socio-economic surveys are prepared. (iv) Conduct a socio-economic survey with the students. 	<p>Use Approved FMH Base Maps</p>
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	<p>3.0 Data Analysis 3.1 Collate data. 3.2 Analysed Data. 3.3 Interpret the analysis and draw conclusions.</p> <p>4.0 Neighborhood Design 4.1 Identify design principles. 4.2 Design a planned residential community/neighborhood 4.3 Prepare a written report for the design. 4.4 Prepare a three dimensional of the design residential community of the neighborhood.</p>	<p>(i) Explain various data analysis and presentation. (ii) Give assignment.</p> <p>(i) Explain nature, slop and content of design principles (ii) Prepare a neighborhood design with model (iii) Prepare a written report</p>	<p>Vehicles, maps, camera</p> <p>Modeling equipment/materials</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: BUILDING DESIGN AND CONSTRUCTION I		Course Code: URP 211	Contact Hours 1-0-6
Course Specification Theoretical Content			
Week	General Objective 1.0 Understand Basic Knowledge of the Building Design and Construction		
	Special Learning Objective	Teachers Activities	Learning Resources

1 - 3	<p>Preliminary Operations in Building Construction</p> <p>1.1 Explain the basic building process and site Works:</p> <ul style="list-style-type: none"> a) choice of site b) site investigation c) setting out d) sequence of building operation e) control of building work <p>1.2 Interpret building and layout plans in relation to:</p> <ul style="list-style-type: none"> a) site b) terrain c) climate d) orientation e) access f) set back g) coverage etc. 	<ul style="list-style-type: none"> i. Explain basic building process and site works. ii. Explain scope and content of building and layout plans in relation to physical factors. iii. Visit site to demonstrate all stages of the building works. iv. Explain the elements of site reports. v. Ask the students to write simple site reports to be graded. 	<ul style="list-style-type: none"> i. Textbooks, Journals and building code/guidelines. ii. Vehicle, camera, layout and building plans/codes.
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4 – 6	<p>1.3 Determine their relationships with adjoining Structures and alignments of utility networks.</p> <p>1.4 Visit site to appreciate preliminary building Operations.</p> <p>2.0 Building Materials for Construction</p> <p>2.1 Identify building materials e.g.-</p> <ul style="list-style-type: none"> -stone -sand -cement -water -mortar -clay -wood -metal -paints -glass -ceramic materials -zinc -asbestos etc. <p>2.2 Describe these building materials and their Properties.</p> <p>2.3 Explain the relationship between each Material and climate.</p> <p>2.4 Relate cost of materials to design of building in Nigeria.</p> <p>2.5 Visit site to acquaint students with various Materials used for building .</p>	<p>i. Show various building materials and explain their properties and application.</p> <p>ii. Relate each materials to strength, cost and effect climate has.</p> <p>iii. Explain use of tools in brick/ block works and illustrate how brick work is done .</p> <p>iv. Visit construction site to observe process for mixing of concrete to laying of blocks..</p>	<p>i. Textbooks, Building materials, and tools used in the building industry.</p> <p>ii. Vehicle, camera.</p> <p>iii. Films/slides on building works.</p>
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<p>10 - 12</p>	<p>4.0 Building Design Standards and Codes</p> <p>4.1 State building standards in Nigeria used for :</p> <ul style="list-style-type: none"> -foundations -floors -walls -windows/doors -stairs etc. <p>4.2 Interpret building codes in areas of operation.</p> <p>4.3 Relate building design standards and codes in practice.</p>	<p>i. Explain different types of building, standards and codes in Nigeria and developed countries.</p> <p>ii. Explain application of codes to various building works.</p>	<p>i. FMWH Building standard codes.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE URBAN AND RURAL SOCIOLOGY		Course Code: URP 213	Contact Hours 2 – 0 – 0
Course Specification			
Theoretical			
Week	General Objective	UNDERSTAND HOW SOCIETY INFLUENCES BOTH URBAN & RURAL SETTLEMENT AND THEIR PLANNING IMPLICATIONS	
	Special Learning Objective	Teachers Activities	Learning Resources
1 –3	<p>1.0 Environment and Human Kind</p> <p>1.1 Define and differentiate among the Following spatial units: Municipalities, Neighborhoods, Ecological Areas, Communities, Urban Areas, Rural Areas etc.</p> <p>1.2 Explain the following: a city, Metropolis, mega polis, primate cities and villages.</p> <p>1.3 Sketch each with its element s.</p> <p>1.4 Identify the social forces that shape Physical environment of human kind (economic, political and cultural) etc.</p>	<p>i. Give broad overview of human habitat and the physical environment.</p> <p>ii. Differentiate the various spatial units and the social forces responsible for their shapes.</p> <p>iii. Explain the various types of human habitat using sketches, pictures a video clips.</p>	<p>i. Textbooks, Journals, maps pictures, sketches and video clips on settlements, machine and monitor/TV.</p>

4-6	<p>2.0 Urban Sociology</p> <p>2.1 Explain the following sociological Concepts: culture, social actions, social Interactions, social institutions, Associations, organisations, control Family, religion, etc</p> <p>2.2 Relate the concepts in 2.1 above in Urban Planning Practice.</p>	<p>i. Explain the various sociological concepts and show how they are related to urban planning practice.</p>	
7 - 9	<p>3.0 Urbanization</p> <p>3.1 Define urbanization, and urban process.</p> <p>3.2 Trace the three phases of urbanization in Nigeria – pre-colonial era, colonial era and the post independence era.</p> <p>3.3 Relate oil boom or other economic upsurge to rapid urbanization in Nigeria.</p> <p>3.4 Describe the main criteria for distinguishing urban and rural areas.</p> <p>3.5 Relate urbanization to technological advancement, dispersion of objects of consumption and division of labour.</p> <p>3.6 Prepare a layout using planning tools for:</p> <p>a) urban setting</p> <p>b) rural setting.</p>	<p>i. Explain the nature and character of urbanization generally in Nigeria.</p> <p>ii. Identify the urban rural dichotomy in Nigeria.</p> <p>iii. Explain how to prepare a mental map of an urban and rural setting.</p> <p>iv. Give assignment on how to prepare a mental sketch map.</p>	<p>FMWH literatures on urbanization.</p> <p>NITP/TOPREC conference papers.</p>

10 - 12	<p>4.0 Rural Settlement</p> <p>4.1 Analyse the specific life patterns of a Chosen village.</p> <p>4.2 Relate their life style to the socio-cultural Characteristics of the people.</p> <p>4.3 Formulate a rural settlement development Programme of area of operation.</p>	<p>i. Explain the specific life patterns of a chosen village and their related socio-cultural characteristics.</p> <p>ii. Demonstrate formulation of rural settlement development programme.</p>	<p>Films slides on settlements.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN & REGIONAL PLANNING			
COURSE HOUSING I		Course Code: URP 215	Contact Hours 1 – 0 – 3
Course Specification			
Theoretical Content:			
Week	General Objective: UNDERSTAND CONCEPTS OF HOUSING AND THEIR APPLICATION TO SOLVE PLANNING PROBLEMS		
	Special Learning Objective	Teachers Activities	Learning Resources
1	1.0 Common Housing Terms 1.1 Define the following: housing, housing need, housing demand, housing supply housing stock, housing unit, housing estate, shelter, dwelling, housing market and occupancy ratio and affordability house hold etc. 1.2 State their differences. 1.3 Evaluate each of the concepts in relation	i. Define various terms and concepts used in housing studies. ii. Explain their roles in housing development.	Textbooks/Journals
2	2.0 Importance off Housing to Man 2.1 Discuss the importance of shelter to man. 2.2 Explain the social significance of housing to human kind. 2.3 Assess the role of housing in the Economic development of a community.	i. Explain importance of Housing to Man. ii. Outline the role of housing in the economic and social life of a community.	Slides/films on housing. Books/literatures of NITP and FMWH.

3 - 4	<p>3.0 Basic Housing Concepts</p> <p>3.1 Explain the following housing terms: need, Demand, supply, stock.</p> <p>3.2 State the determinants of housing need, Demand, supply and stock. Etc.</p> <p>3.3 Relate the basic concepts to Nigerian urban Centres and rural settlements.</p> <p>3.4 calculate housing demand and supply as attained in Nigeria.</p>	<p>i. Explain the determinates of housing need, supply and stock.</p> <p>ii. Demonstrate difference between rural and urban housing.</p> <p>iii. Explain how to calculate housing demand & supply in Nigeria.</p> <p>iv. Give Assignment on calculation of supply and need.</p>	Housing Textbooks.
5 - 6	<p>4.0 Common Housing Types in Nigeria</p> <p>4.1 List the common housing types found in Nigerian urban and rural centers.</p> <p>4.2 Describe with the aid of sketches, the common housing types in Nigeria.</p> <p>4.3 Trace the evolution of the housing types and their suitability under Nigerian conditions.</p> <p>4.4 Appraise the current housing trends in Nigeria with special reference to the state of operation.</p>	<p>i. Explain various housing concepts in general and in Nigeria. Using sketches.</p> <p>ii. Explain evolution of housing type their sustainability under conditions in Nigeria.</p> <p>iii. Explain current housing trends and policy.</p>	Housing Sketches.

7-8	<p>5.0 Housing Standards</p> <p>5.1 Explain housing standard.</p> <p>5.2 List the common types of standard that affect the quantity and quality of housing output e.g. density.</p> <p>5.3 Apply the criteria for establishing each of the common housing standards.</p> <p>5.4 Prepare a housing standards proposals in your State of operation.</p> <p>5.5 Assess selected housing standards in current use in Nigeria</p>	<p>i. Explain housing standards and identify the various types.</p> <p>ii. Explain the criteria for establishing each common housing standards.</p> <p>iii. Demonstrate preparation of housing standards proposals.</p> <p>iv. Give assignment on development of housing standards.</p>	Textbook, Journals
9	<p>6.0 Sources and Characteristics of Housing Finance</p> <p>6.1 Explain housing finance.</p> <p>6.2 Outline the various sources of housing finance in Nigeria and elsewhere</p>	<p>i. Explain housing finance including types sources and processes.</p> <p>ii. Explain methods for evaluating housing finance in Nigeria.</p>	FMW, FMB, UDB and conference papers of NITP/TOPREC.

10 - 12	<p>6.3 Describe the main features of housing finance in relation to household income, interest rate, repayment period, etc.</p> <p>6.4 State the process of applying for housing loan in your state of operation.</p> <p>6.5 Evaluate housing finance situation in Nigeria.</p> <p>7.0 Local Housing Survey for Urban and Regional Planning</p> <p>7.1 Undertake survey to determine housing stock of defined local area.</p> <p>7.2 Undertake survey to determine housing need of specified local community.</p> <p>7.3 Undertake survey to determine classes of housing conditions.</p>	<p>i. Undertake survey of housing stock of your choice plus needs assessment and conditions.</p> <p>ii. Explain the major housing problems in Nigeria including causes.</p> <p>iii. Explain the methods for preparing proposals for the mitigation.</p> <p>iv. Give assignment.</p>	<p>Vehicle, camera</p> <p>Journals, books</p>
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	<p>8.0 Housing Problems in Nigeria</p> <p>8.1 Describe the major housing problems in Nigeria.</p> <p>8.2 Analyse the causes of the problems.</p> <p>8.3 Make proposals for mitigation of the problems.</p>	<p>i. Outline Housing problems in Nigeria.</p> <p>ii. Visit an identified Housing Areas.</p> <p>iii. Give students exercises.</p>	<p>i. Films. slides of Housing problem Areas.</p> <p>ii. FMW reports and NITP conference papers.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE TRANSPORTATION I		Course Code: URP 217	Contact Hours 1 – 0 – 3
Course Specification			
Theoretical Content:			
Week	General Objective UNDERSTAND TRANSPORTATION PLANNING AND ITS USE IN PLANNING		
	Special Learning Objective	Teachers Activities	Learning Resources
1 - 2	<p>1.0 Element of Transport System</p> <p>1.1 Define Transportation Planning.</p> <p>1.2 Explain the characteristics of various forms of transport e.g. road, rail, water, air .</p> <p>1.3 Outline the role of the various forms of transport in urban and physical planning.</p> <p>1.4 State the various organs responsible for each form.</p> <p>2.0 Land Use Planning & Transportation Planning</p> <p>2.1 Explain the meaning of ‘land use’</p> <p>2.2 Discuss factors influencing trip generation.</p> <p>2.3 Explain the need to integrate land use Planning and transportation planning.</p> <p>2.4 Interpret existing transportation Layout plans.</p>	<p>i. Define the nature and scope of transportation planning.</p> <p>ii. Explain characteristics of various forms of transportation and their role in physical planning.</p> <p>iii .Explain the meaning of land use and the relationship between land use transportation.</p> <p>iv. Show how to interpret existing transportation layout.</p>	<p>i. Literatures, FMT Handbooks.</p> <p>ii. Books on Rail, Road, Water and Airports.</p> <p>iii. Urban design criteria or related Books.</p> <p>iv. Road maps of Nigeria.</p> <p>v. FMWH Transportation.</p> <p>vi. Standard and code.</p> <p>v. Site planning textbooks.</p>

3-5	<p>3.0 Transportation Problems</p> <p>3.1 Outline the nature of the transport problem.</p> <p>3.2 Analyse the various causes of transport problems.</p> <p>3.3 Identify the general approaches to solving the transport problems..</p> <p>3.4 Appraise transportation problems in your area of operation.</p> <p>3.5 Discuss the general approach to solving transportation problems in area of operation.</p>	<p>i. Explain various transport problems and their causes.</p> <p>ii. Explain approaches to solving the transport problems.</p> <p>iii. Give assignment on how to identify transportation problems and solutions.</p>	<p>i. Conference papers of NITP.</p> <p>ii. Urban transportation Planning textbooks.</p>
6-8	<p>4.0 Mass Transit in Urban Centre</p> <p>4.1 List the advantages and disadvantages of mass Transit planning.</p> <p>4.2 Determine causes of traffic congestion in Urban cities.</p> <p>4.3 Distinguish public and private mass Transportation in urban centers.</p> <p>4.4 Undertake the survey, analysis, projection and presentation of mass transportation data</p> <p>4.5 Undertake the location and design of mass Transportation facilities.</p>	<p>i. Explain the nature, scope and character of mass transport.</p> <p>ii. Explain differences between public and private mass transportation.</p> <p>iii. Undertake survey, analysis, projection and presentation of data on transportation and design of facilities..</p> <p>iv. Give assignment.</p>	<p>i. Vehicles, textbooks, films, slides of a typical mass transit Centre in an urban centres.</p>

<p>9</p>	<p>5.0 Traffic Management Techniques</p> <p>5.1 Define ‘traffic management’.</p> <p>5.2 Explain the principles upon which general Traffic management techniques are based. e.g. one-way schemes, tidal flow arrangements, box junction, traffic lights, zebra crossing, parking cars, etc.</p> <p>5.3 Determine the problems faced in traffic management.</p> <p>6.0 Transportation Policies</p> <p>6.1 Discuss the position of transportation in the past development plans of State and Federal Government.</p> <p>6.2 Interpret the present and the future. Transportation policies of State and Federal Governments.</p> <p>6.3 Formulate transportation policies in the area of operation</p> <p>Field Trips</p> <p>6.4 Undertake visits to airways, railways, Waterways and Ministries of Transport.</p> <p>6.5 Carry out simple exercise in selected topics under supervision.</p>	<p>i. Define traffic management.</p> <p>ii. Explain principles for traffic management and their problems.</p> <p>i. Explain the evolution of transportation in Nigeria.</p> <p>ii. Explain the various policy drive in transportation in Nigeria.</p> <p>iii. Formulate transportation policies in the area of operation.</p> <p>iv. Undertake visits to transportation facilities.</p> <p>v. Give assignment.</p> <p>vi. Reappraise the mode of Transportation in Nigeria with students.</p> <p>vii. Give students, exercises to write on one mode of the transportation experienced during their visit.</p>	<p>i. Text books & Journals</p> <p>i. Urban Transportation policies in Nigeria and FMWH, FMT papers.</p> <p>ii. NITP conference papers.</p> <p>iii. Vehicles for site visit.</p> <p>iv. Slides, films and conference papers.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA.

PROGRAMME: NATIONAL DIPLOMA IN URBAN & REGIONAL PLANNING			
COURSE SUSTAINABLE HUMAN SETTLEMENT I		Course Code: URP 219	Contact Hours 2 – 0 - 0
Course Specification			
Theoretical Content:			
Week	General Objective UNDERSTAND SUSTAINABLE HUMAN SETTLEMENT APPROACH AND PLANNING PRACTICE		
1-3	Special Learning Objective	Teachers Activities	Learning Resources
	1.0 Nature of Human Settlement 1.1 Define human settlement 1.2 Classify settlement according to nature functions, size, origin etc. 1.3 Outline the historical development of human settlements. 1.4 Discuss the planning and administration of traditional human settlement.	i. Define human settlement. ii. Explain the classification of human settlement into types. iii. Explain the planning and administration of traditional human settlements.	Text book, Journals UN, UNDP Publications Conference paper of NITP.
4-8	2.0 Sustainable Development 2.1 Define “sustainability”, sustainable Development. 2.2 Discuss types of sustainable Development (physical, economic, Social, and cultural). 2.3 Explain the principles of sustainable Development. 2.4 Discuss the 1992 UN conference on Sustainable human settlement.	i. Define the concept of sustainability and sustainable development. ii. Explain various types and principles of sustainable development. iii. Explain the UN agenda and conferences on sustainable human settlement (agenda 21).	UNDP, UN, World Bank papers.

9-12	<p>2.5 Explain the WCED Document, Agenda 21 (World Commission on Environment and Development).</p> <p>3.0 Sustainable Cities Programme</p> <p>3.1 Explain the concept and genesis of sustainable cities programme.</p> <p>3.2 Discuss the establishment and performance of the 12 global sustainable city demonstration projects.</p> <p>3.3 Give an over-view of the sustainable Ibadan Project (SIP), and the Kano and Enugu replication projects.</p>	<p>iv. Give assignment.</p> <p>i. Explain the history and evolution of sustainable cities programme.</p> <p>ii. Explain the general establishment and performance of the global sustainable city.</p> <p>iii. Give overview of the sustainable programme in Nigeria.</p>	<p>UN, UNDP, World Bank.</p> <p>Conference papers.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN & REGIONAL PLANNING			
COURSE COMPUTER APPRECIATION		Course Code: URP 221	Contact Hours 1 - 0 - 3
Course Specification			
Theoretical Content:			
Week	General Objective UNDERSTAND FUNDAMENTALS OF COMPUTER & COMPUTING PROGRAMMING		
	Special Learning Objective	Teachers Activities	Learning Resources
1-2	1.0 Computing and Computer 1.1 Explain the concepts of Digital Computing. 1.2 Trace the history of computer. 1.3 Classify computer of type, size, functions, etc. 1.4 Explain the characteristics of computers.	i. Explain the nature and character of digital computer. ii. Explain evolution of Computer Science and role in Society. iii. Explain types, components and features of Computers.	Textbook, Journals Computer sets.
3-4	2.0 Computer Hardware 2.1 Define computer hardware. 2.2 Identify different units of computer Hard wares 2.3 Explain basic anatomy of computers. 2.4 Describe the functions and characteristics of Computer peripherals.	i. Explain the various aspects of computer hardware. ii. Explain the anatomy of the computer and its accessories. iii .Explain the functions and character of computer peripherals.	Computer guides.

5-6	<p>3.0 Computer Software</p> <p>3.1 Define computer software.</p> <p>3.2 Distinguish between different types of computer software.</p> <p>3.3 Explain operating system and application packages.</p>	<p>i. Explain the nature, types and characteristics of computer software.</p> <p>ii. Explain the operating system and application packages.</p> <p>iii. Give exercise.</p>	<p>Textbook, Journals Software types.</p>
7-10	<p>4.0 Fundamentals of Software Programming</p> <p>4.1 Describe Algorithm and chart.</p> <p>4.2 Explain the common flow charts symbols.</p> <p>4.3 Identify differences between High and Low Level languages.</p> <p>4.4 State types of low and High level Languages.</p>	<p>i. Explain the principles of software programming.</p> <p>ii. Explain the differences between Algorithm and flow chart and their symbols.</p> <p>iii. Differentiate high and low level languages.</p> <p>iv. Give Exercise.</p>	<p>Textbooks, Journals, Computer literatures etc.</p>

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE STUDIO II: RESIDENTIAL LAYOUT DESIGN		Course Code: URP 223	Contact Hours 1-0-6
Course Specification			
Theoretical Content			
Week	General Objective UNDERSTAND THE NECESSARY SKILLS REQUIRED IN THE DESIGN OF RESIDENTIAL LAYOUT		
	Special Learning Objective	Teachers Activities	Learning Resources
1-2	<p>1.0 Structure of Planned Residential Area</p> <p>1.1 Explain the social and physical elements of residential area.</p> <p>1.2 Outline the importance of each of them.</p> <p>1.3 Relate each of this element to planning practice.</p> <p>2.0 Site Conditions</p> <p>2.1 Outline the process of preparing layouts.</p> <p>2.2 Prepare layouts of residential area.</p> <p>2.3 Prepare alternatives plan</p> <p>2.4 Select a preferred alternatives.</p> <p>2.5 Detail the preferred alternatives making use of various detailed standards e.g. road width, plot sizes.</p> <p>2.6 Make a three dimensional presentation of the design e.g. model making or perspective Etc.</p>	<p>i. Explain the nature, character of various elements of residential development.</p> <p>ii. Give students assignment.</p> <p>i. Explain process of site analysis and social & economic factors to consider.</p> <p>ii. Visit a site.</p> <p>iii. Explain and demonstrate model making of a selected site</p> <p>iv. Give exercise</p>	<p>Relevant Textbooks, Journals.</p> <p>Drawing Board with drafting machines, light tables.</p> <p>Vehicle, model making materials and Equipment, cameras etc.</p>

6-7	<p>3.0 Planning Standards</p> <p>3.1 List the various land uses to be accommodated.</p> <p>3.2 State the standards relevant to each use (land use budget).</p> <p>3.3 Apply the standards to planning practice.</p>	<p>i. Explain various land uses and the minimum planning standards.</p> <p>ii. Treat a case study.</p>	<p>Textbooks, relevant guidelines From NITP, TOPREC etc.</p>
8-9	<p>4.0 Techniques of Preparing Layouts</p> <p>4.1 Outline the processes of preparing layouts.</p> <p>4.2 Prepare layouts and models of a residential area.</p> <p>4.3 Differentiate between all sectors of the area.</p>	<p>i. Explain process of preparing a layout.</p> <p>ii. Student to prepare a layout for residential area and a model.</p>	<p>Textbooks, relevant guidelines From NITP, TOPREC etc.</p>
10-12	<p>5.0 Report Writing</p> <p>5.1 Prepare the outline of the report.</p> <p>5.2 Write the report.</p> <p>5.3 Present the report.</p>	<p>i. Explain nature and content of report writing and presentation.</p> <p>ii. Give assignment.</p>	<p>Books on Reports/Project writing.</p>

11-12	<p>5.0 Security, Controls and Social Issues in Computing</p> <p>5.1 Explain Security and privacy in computing</p> <p>5.2 Explain computer virus.</p> <p>5.3 Analyse the effects of computing on Employment, organizational structure, and Environment.</p> <p>5.4 Describe the potentials and future of Computing.</p>	<p>i. Explain the nature and scope of security and privacy in computing.</p> <p>ii. Explain Computer virus.</p> <p>iii. Explain the effects of computing on society and the future.</p>	Textbooks, Journals
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE URBAN ECONOMICS		Course Code: URP 220	Contact Hours 1 – 2 - 0
Course Specification			
Week	General Objective EXPOSE STUDENTS TO URBAN ECONOMICS AS IT APPLIES TO URBAN AND REGIONAL PLANNING		
1-2	Special Learning Objective	Teachers Activities	Learning Resources
	<p>1.0 Economic Base Theory</p> <p>1.1 Explain the term economic base of a Community.</p> <p>1.2 Distinguish between basic and non-Basic activities.</p> <p>1.3 Explain the term multiplier and its Relationship to employment.</p> <p>1.4 State the relevance of economic base Theory in Urban and Regional Planning.</p> <p>1.5 Apply economic base theory to planning Practice.</p>	<p>i. Explain Economic Base of a Community.</p> <p>ii. Distinguish between basic and non base activities.</p> <p>iii. Relevance of Economic base theory to urban planning.</p>	<p>Typical example of the Importance of this concept i.e. Compare an economically. Depressed area to one that is buoyant.</p> <p>Core Text Books and Journals. Urban Economic textbooks.</p>

3-5	<p>2.0 Location Theory</p> <p>2.1 Explain the concept of location theory.</p> <p>2.2 Explain the concepts of central place theory e.g. market area, range of a good, thresholds of good and service, etc.</p> <p>2.3 Determine the factors influencing the location of industrial activities, e.g. raw material, power, market, labour, etc.</p> <p>2.4 State the implications of location in Urban And Regional Planning.</p> <p>2.5 Relate the concept to Urban Planning practice.</p>	<p>i. Explain location theory.</p> <p>ii. Explain central place theory.</p> <p>iii. Discuss influencing the location of industries.</p> <p>iv. Relate concept to urban planning practice.</p>	Urban Economic Books.
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3-5	<p>3.0 Economic of Housing</p> <p>3.1 Explain the term Housing Market.</p> <p>3.2 State the involvement of government and its effect in the operation of the Housing Market (government regulations and activities).</p> <p>3.3 Show the relationship between cost and terms with examples.</p> <p>3.4 Relate them to Urban Planning practice.</p>	<p>i. Explain the term housing market.</p> <p>ii. Explain the necessity of Government involvement in Housing.</p> <p>iii. Relate the economics of housing to planning practice.</p>	Textbooks on Housing.
9-10	<p>4.0 Concept of Cost Benefit Analysis</p> <p>4.1 Explain the concept of cost benefit analysis.</p> <p>4.2 Determine the element of costs and benefits.</p> <p>4.3 Identify the procedure of evaluation of cost And benefits.</p> <p>4.4 Relate cost benefit analysis to a simple Planning problems.</p> <p>4.5 Provide worked examples.</p>	<p>i. Explain examples of CBA.</p> <p>ii. Give students assignments on CBA.</p>	Textbooks on Housing.

	<p>5.0 Welfare Economics</p> <p>5.1 Explain the concept of welfare economics.</p> <p>5.2 Relate the concept and characteristics of public good.</p> <p>5.3 Determine the cost of provision of public goods.</p> <p>5.4 Describe the costs of provision of public agencies.</p> <p>5.5 Assess the concept of externalities and the Role of government in regulating their effects.</p> <p>5.6 Analyse the welfare economic basis of Urban and Regional Planning.</p> <p>5.7 Relate the economic concepts in planning.</p>	<p>i. Explain the term welfare Economics as different from others.</p> <p>ii. Assess the concept of externalities and the role of Government in regulating their effects.</p> <p>iii. Analyse the welfare economic basis of urban and regional planning.</p>	<p>Textbooks on welfare Economics, Urban Economics etc.</p> <p>UN papers.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE BUILDING DESIGN AND CONSTRUCTION II		Course Code: URP 222	Contact Hours 2 – 0 - 6
Course Specification			
Theoretical Content:			
Week	General Objective TO ACQUAINT STUDENTS WITH THE MAJOR ELEMENTS OF BUILDING TECHNIQUES		
	Special Learning Objective	Teachers Activities	Learning Resources
1-2	1.0 Foundation of Building 1.1 Define soil. 1.2 List types of soil. - sandy - clay - alluvial 1.3 Characteristics 1.4 Define foundation & compliments	i. Explain foundation. ii. Explain soil types. iii. Field trip for student to know the different types of soils and uses. iv. Visit Geological survey and observe the processes of soil text samples.	Relevant Textbooks of foundation types and Soils, sandy, loamy, foundation Materials Core Text books and Journal Publication on Building construction. Vehicles for site visits.
3	2.0 Construction of floors 2.1 Functions of floors in building. 2.2 Types of floors. 2.3 List types materials for floor work. 2.4 Durability.		

<p>4</p> <p>5/6</p>	<p>3.0 Design & Function of Walls</p> <p>3.1 State the function of walls. 3.2 Materials for wall. 3.3 Illustrate wall types. 3.4 Describe the elements of walls. 3.5 Visit site and appreciate wall finishes.</p> <p>4.0 Principle of Rood Design, Windows and Doors</p> <p>4.1 Principles to be considered in Roof Design. 4.2 Roof types. 4.3 Roof materials. 4.4 Roof construction techniques.</p>	<p>i. Explain the function of walls, wall types and elements of walls. ii. Give students assignments.</p>	<p>A visit to typical block/blocks on campus will make a lot of difference.</p>
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6	<p>5.0 Functions of Windows and Doors</p> <p>5.1 Functions of Window</p> <p>5.2 Functions of Doors</p> <p>5.3 Materials used for both doors and windows.</p> <p>5.4 Illustrate types of Windows.</p> <p>5.5 Illustrate door frames and linings.</p>	<p>i. Show students types of frames for windows and doors.</p> <p>ii. Ask group of students to produce a simple frames and doors and windows.</p>	<p>Building Construction.</p> <p>Textbooks.</p>
7	<p>6.0 Types and Methods of Constructing Stairs and Fittings</p> <p>6.1 List types of stairs.</p> <p>6.2 Illustrate stairs.</p> <p>6.3 Explain methods of constructing staircases.</p> <p>6.4 Describe some fittings used for stairs e.g. Wood trim, simple joinery, paneling etc.</p> <p>6.5 Visit site and appreciate staircase.</p>	<p>i. Give assignments to the students of this topic.</p> <p>ii. Illustrate the different types.</p> <p>iii. Highlight the advantages of types/methods.</p>	

8-9	<p>7.0 Building Finishes</p> <p>7.1 List finishing materials for the following Component: a) wall, floor, roof and b) ceiling.</p> <p>7.2 Describe external rendering and painting and other wall and floor finishing</p> <p>7.3 Visit site to appreciate building finishes e.g. Lighting, plumbing works etc.</p> <p>7.4 Carry out simple operation on each of them.</p>	<p>i. Explain and show through slides finishing materials.</p> <p>ii. Develop the students ability in good finishing job.</p>	<p>Textbooks on Building furnishes.</p> <p>FMWH Building Standard/Codes.</p>
10	<p>8.0 Minor Building Maintenance</p> <p>8.1 Identify minor repair works in a building.</p> <p>8.2 Describe restoration process in a building.</p> <p>8.3 Visit site to appreciate how building Maintenance are carried out.</p>	<p>i. Visit a Housing Estate and observe minor Building Maintenance.</p> <p>ii. Explain the importance of maintenance and restoration process in building.</p> <p>iii. Give students assignments.</p>	<p>Vehicle for visits.</p>

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: ND II URBAN REGIONAL PLANNING			
COURSE INFRASTRUCTURE PLANNING		Course Code: URP 224	Contact Hours 1 – 0 – 3
Course Specification			
Week	General Objective 1.0 To Equip the Students with the Basic Principles of Infrastructures Provision		
	Special Learning Objective	Teachers Activities	Learning Resources
1	1.0 Various types of Infrastructure 1.1 Define infrastructure 1.2 Enumerate types of infrastructure	i. Define & explain infrastructure. ii. Explain infrastructure. iii. Ask the Students simple questions on infrastructure.	i. A visit to an establishment where this element is functional will do a lot of good. ii. Core textbooks and Journals.
2	2.0 Water Consumption Requirement 2.1 Estimate domestic consumption per capital per day. 2.2 Estimate industrial consumption per raw materials, the equivalent per capital per day consumption. 2.3 Estimate quantity for fire fighting,	i. Explain consumption/importance. ii. Explain it in the domestic industrial fire fighting realm. iii. Visit Water Board in your area of operation.	i. Vehicle/camera, literature of the Water Board in your area of operation.
3	3.0 Sources of Water Storage 3.1 Trace sources of water such as rainfall. Ground water, surface water. 3.2 Describe various methods of water Collection and storage.	i. Explain sources of water storage. ii. Explain MTD of H ₂ O storage	

<p>4 - 5</p>	<p>3.3 State their relative purities of water from the various sources.</p> <p>3.4 Prepare a layout of water storage facilities in state of operation.</p> <p>4.0 Water Treatment and Distribution</p> <p>4.1 Describe types of water treatment techniques.</p> <p>4.2 State the effect of original water quality on choice of treatment methods.</p> <p>4.3 Explain sedimentation techniques.</p> <p>4.4 Describe the types of materials used in Water treatment.</p> <p>4.5 Explain the use of rains, booster, services Reservoir in the process of water distribution.</p> <p>4.6 Explain the effect of attitude in the transmission of water to the consumption area.</p> <p>4.7 Illustrate water distribution techniques e.g. Branching grid iron techniques</p> <p>4.8 Prepare a layout of water treatment and Distribution in the state of operation</p>	<p>i. Explain water treatment technique.</p> <p>ii. Explain Water Distribution technique.</p> <p>ii. Visit to Water treatment site and observe operation.</p> <p>iv. Students should write their observations and should be graded.</p>	<p>Water supply and treatment books.</p> <p>Conference papers of NITP and NSE.</p> <p>Vehicle for visit.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE POPULATION STUDIES		Course Code: URP 226	Contact Hours 1 – 0 – 0
Course Specification			
Theoretical Content:			
Week	General Objective	TO ACQUAINT THE STUDENTS WITH THE KNOWLEDGE OF POPULATION AND ITS RELATION TO PLANNING	
	Special Learning Objective	Teachers Activities	Learning Resources
1	<p>1.0 Sources of Population Data</p> <p>1.1 Identify the sources of population data. 1.2 State the relative importance of these Sources for planning purposes.</p> <p>2.0 Methods of Data Collection and collation</p> <p>2.1 Explain the different sampling techniques. 2.2 Explain the use of statistical and descriptive In analyzing population data.</p>	<p>i. Explain sources of population data. ii. Give Students assignments.</p> <p>i. Explain sampling technique. ii. Explain the use of statistics and descriptive in analyzing population data..</p>	<p>National Population Commission Publication (Nigeria).</p> <p>Population census Office and data Textbooks and Journals</p> <p>Past records on these issues should be made available.</p>

3	<p>3.0 Elements of Population</p> <p>3.1 Explain elements of population: (a) fertility (b) mortality (c) birth rate (d) death rate (e) growth rate (f) dependency rate, etc.</p> <p>3.2 Evaluate each element listed above.</p> <p>3.3 Explain these elements to planning.</p>	<p>i. Explain elements of population.</p> <p>ii. Explain the relevance of planning.</p>	<p>Textbooks on Population Studies.</p>
5-6	<p>4.0 Characteristics of Population</p> <p>4.1 Explain population characteristics: (a) age Structure (b) sex ratio (c) race (d) religion (e) income grouping etc.</p> <p>4.2 Explain population dynamics.</p> <p>4.3 Determine factors that influence population Change e.g. natural increase, migration, etc.</p> <p>4.4 Appraise these factors in relation to Planning practice.</p>	<p>i. Explain population characteristics.</p> <p>ii. Explain population change.</p>	<p>Use Urban Economics Textbooks.</p>

<p>9 -10</p>	<p>7.0 Methods of Solid Waste Disposal Treatment</p> <p>7.1 Explain the use and operation of incineration, composition, open dump, sanitary land fill, etc.</p> <p>7.2 Estimate the land area or volume required for sanitary landfills.</p> <p>7.3 Make proposal on solid waste can be recycled..</p> <p>7.4 Prepare a layout of solid waste disposal treatment plant in your area of operation.</p> <p>Field Work</p> <p>7.5 Undertake visits to Ministries of Environment, utilities board, health Management board, etc, and appreciate how The various infrastructures are being operate.</p> <p>7.6 Carry out simple works on selected topics.</p>	<p>i. Explain solid waste treatment.</p> <p>ii. Explain solid waster disposal.</p> <p>iii. Prepare layout for solid waste as assignments to the students</p>	<p>i. UNDP, Books on water supply and water treatment.</p> <p>ii. Visits Water Board in your state of operation.</p> <p>i. Vehicle, papers</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE URBAN PLANNING LAW		Course Code: URP 228	Contact Hours 2 – 0 - 0
Course Specification			
Theoretical Content:			
Week	General Objective TO EXPOSE STUDENTS TO LEGAL FRAME WORK UNDER PHYSICAL PLANNING OPERATES IN NIGERIA.		
1 – 3	Special Learning Objective	Teachers Activities	Learning Resources
	<p>1.0 Operation of Urban Planning Law in Nigeria</p> <p>1.1 Explain the nature, scope and context of Urban Planning Law in Nigeria.</p> <p>1.2 Evaluate the main provisions of the revised Nigerian Urban and Country Planning Law of 1946.</p> <p>1.3 Trace the history of establishment and functions of Urban Planning Authorities in Nigeria.</p> <p>1.4 Appraise development control as provided in the Law.</p> <p>1.5 State procedure for preparing planning scheme.</p> <p>1.6 Explain the procedure of acquisition of land for public purpose.</p> <p>1.7 Distinguish between compensation and betterment.</p> <p>1.8 Explain protection of public servants in Executing planning schemes</p>	<p>i. Explain the evolution of Urban Planning law in Nigeria.</p> <p>ii. Highlight the main provision of the 1946 law.</p> <p>iii. Distinguish between compensation and betterment.</p> <p>iv. Give the students assignments.</p>	<p>Sources like the archives, Law Review etc. should Be sought for details.</p> <p>Textbooks and Journals</p> <p>NITP Conference/MCTD Workshops.</p> <p>Planning Law.</p> <p>NITP Handbooks.</p>

4 -5	<p>2.0 Current Physical Planning Policies</p> <p>2.1 List the current physical planning policies e.g. E.I.A., National Housing, Housing Policies, Urban Development Policy etc.</p> <p>2.2 Explain the institutional framework for Physical planning policies.</p> <p>2.3 Appraise physical planning policies as listed In 2.1.</p> <p>3.0 Building Bye-Law</p> <p>3.1 Explain the application and working of building Bye-Laws.</p> <p>3.2 Explain Public Health Law in relation to Building Bye-Law.</p> <p>3.3 Explain the Highway Laws in relation to Sitting of buildings.</p> <p>3.4 Formulate Bye-Laws in the state of operation.</p> <p>3.5 Apply these Bye-Laws to Urban Planning Practice.</p>	<p>i. Explain current physical planning policies i.e. E.I.A. Nation housing , Housing Policies etc.</p> <p>ii. Explain physical planning policies.</p> <p>i. Explain the application & working of Building Bye-Laws.</p> <p>ii. Explain Public Health Law in relation to Building bye-laws.</p> <p>iii. Explain the highway laws in relation to setting of buildings.</p> <p>iv. Give the students assignments.</p>	<p>Copies of the law in their original versions.</p> <p>Visit to areas where these laws are fully operational.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE LAND USE PLANNING		Course Code: URP 230	Contact Hours 2 – 0 - 3
Course Specification			
Theoretical Content:			
Week	General Objective	EXPOSE STUDENTS TO THE SOCIAL, BASIC ASPECTS OF LAND USE PLANNING	
	Special Learning Objective	Teachers Activities	Learning Resources
1 - 3	<p>1.0 Determinants of Land Uses</p> <p>1.1 Define land use.</p> <p>1.2 Recognizes the need for land use Planning.</p> <p>1.3 Relate land use planning to the wider process of planning.</p> <p>1.4 Enumerate the determinants of land use Patterns (social, economic, public interest and physical).</p> <p>1.5 Explain the inter-relationship of urban land Uses.</p> <p>1.6 Appraise the evolution of the overall land Use patterns in urban centre using examples In Nigeria.</p>	<p>i. Define land use.</p> <p>ii. Relate land use planning to the wider process of planning.</p> <p>iii. .Explain interrelationship of urban land uses</p>	<p>A trip to a well planned neighborhood will do a Lot of good.</p> <p>Core textbooks and journals.</p>

4 - 5	<p>2.0 Impact of Urban Activity Systems on Land Use</p> <p>2.1 Define Urban Activity Systems.</p> <p>2.2 State the elements of the urban activity systems.</p> <p>2.3 Evaluate the impact of urban activity systems on urban land use pattern.</p> <p>2.0 Classifications and Presentation Techniques of Land Uses</p> <p>3.1 Explain the various methods of classification of land uses.</p> <p>3.2 Classify various urban activities into various land uses.</p> <p>3.3 Undertake various methods of presentation Of land uses (colouring, hatching, coding, etc).</p>	<p>i. Define Urban activity systems.</p> <p>ii. Evaluate the impact of urban activity systems on urban land use pattern.</p> <p>iii. Give the students assignments.</p> <p>i. Discuss methods of classification of land uses.</p> <p>ii. Classify various urban activities into various land uses.</p> <p>iii. Give the students assignments on land use presentation techniques (colouring, hatching ,coding etc.)</p>	<p>Visit an urban set-up.</p> <p>Use of slides/cameras/videos.</p> <p>Use graphics materials and instruments.</p>
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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE: STUDIO III DEVELOPMENT PLANNING		Course Code: URP 232	Contact Hours: 7.0 H/W
Course Specification			
Theoretical Content			
Week	General Objective: UNDERSTAND RELEVANT SKILL TO PLAN A DEVELOPMENT PLAN.		
	Special Learning Objective	Teachers Activities	Learning Resources
1-5	1.0 Comprehensive Design Process 1.1 Define the main features of development plan. 1.2 Identify the main features of development plan in Contemporary practice. 1.3 State the needs for development plan in Contemporary practice. 1.4 Appraise the relevance of development plan concept in modern day planning. 1.5 State the procedures for preparing and implementation of physical develop plan.	i. Lecture and show students examples of development.	Textbooks, journals and various development plans. Use films of a development area.
6-14	2.0 Design of a Small or Medium Size Settlement 2.1 Select a study area (small or medium settlement). 2.2 Conduct necessary filed surveys. 2.3 Analyze the Data. 2.4 Construct appropriate projections and models. 2.5 Establish development design criteria including goal and objectives. 2.6 Prepare a develop plan for the growth of small or medium size settlement. 2.7 Write a technical report on the selected design areas. 2.8 Present the report to the relevant audience under a supervisor. 2.9 Prepare a model of the small or medium size settlement for critique.	i. Identify an appropriate site for study. ii. Prepare outline schedule for plan Production. iii. Organize presentation of studio project.	Textbooks, Maps, Cameras, Drawing Board/Vehicle.

NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

PROGRAMME: NATIONAL DIPLOMA IN URBAN AND REGIONAL PLANNING			
COURSE TERMINAL PROJECT		Course Code: URP 234	Contact Hours 1 – 2 – 0
Course Specification			
Theoretical Content:			
Week	General Objective	TO PROVIDE THE STUDENT THE OPPORTUNITY OF CARRYING OUT A DETAIL STUDY TOPIC IN URBAN PLANNING	
	Special Learning Objective	Teachers Activities	Learning Resources
1 - 2	1.0 Purpose of Terminal Project 1.1 Explain what we mean by terminal Project. 1.2 Discuss its importance.	i. Explain terminal project. ii. Discuss its importance	Core Textbooks Journals and mimeographs
3 – 5	3.0 Common Problems Associated with Terminal Project 2.1 Discuss the issue of choice of topic. 2.2 Explain researchable and non researchable topics. 2.3 Problems to expect from the field e.g. questionnaire administration, gathering of date etc.	i. Discuss how topics are chosen. ii. Explain Researchable and non researchable topics. iii. Explain probable problems associated with project work.	Core Textbooks/Projects Visit the library for literatures.

6 - 8	<p>3.0 Collection and Interpretation of Data</p> <p>3.1 Explain methods of Data Collection.</p> <p>3.2 Distinguish between the various sampling Techniques.</p> <p>3.3 Explain Methods of Data Interpretation.</p>	<p>i. Explain methods of collection.</p> <p>ii. Distinguish between sampling techniques.</p> <p>iii. Explain methods of data interpretation</p>	<p>Guide textbooks for writing projects.</p>
9 - 10	<p>4.0 Planning Implications of Urban of Problems</p> <p>4.1 Explain the term planning implications.</p> <p>4.2 Discuss common planning problems.</p> <p>4.3 Relate 4.1 to 4.2.</p>	<p>i. Explain planning implications</p> <p>ii. Discuss planning problems.</p>	<p>Conference papers and literatures from FMWH.</p>
11- 12	<p>5.0 Terminal Project</p> <p>5.1 Arrange the ideas in a sequence.</p> <p>5.2 Produce the completed work.</p> <p>5.3 Bind the work in book form</p> <p>5.4 Present the project individually to assessors.</p>	<p>i. Arrange the ideas in a sequence.</p> <p>ii. Produce the completed work.</p>	<p>Past projects becomes a ready Guide.</p>

LIST OF MINIMUM RESOURCES FOR URBAN AND REGIONAL PLANNING PROGRAMMES

All the under listed items are the minimum required for these programme and must therefore be provided.

Carpentry (ND only)

1.	Jack plane	10
2.	Smoothing plane	10
3.	Hand saw	10
4.	Chisels	10
5.	Protractors	3
6.	Screw driver (set)	
7.	Measuring tapes (metric)	10
8.	Marking gauge	10
9.	Hammer	10

Brick/Blocklaying (ND only)

1.	Brick/Blocklaying machine (small)	1
2.	Wheel barrow	5
3.	Shovels	5
4.	Head pan	5
5.	Cement box	5
6.	Steel cutter (manual)	1
7.	Bar bender (fabricated)	1
8.	Plastering trovels	10
9.	Spade	5
10.	Iron square	5
11.	Spirit level	5

Plumbing (ND only)

1.	Wash hand basin	1
2.	W/C set	1
3.	Tape fittings	1
4.	Bath top fitted with tap	1

Electrical Installation

Electrical Unit fitted with

- Switches
- Sockets
- Light holder with bulb
- Circuit breaker
- Meter

Painting Decoration and Glazing

1.	Paint tray	2
2.	Paint roller	6
3.	Paint bucket	3
4.	Wire brush	3
5.	Brush	6
6.	Paint pad	6
7.	Paint scrapper	3
8.	Paint spraying machine	1

Model Workshop (ND & HND)

1.	Modelling knives	1
2.	Chisels	2
3.	Vices	6
4.	Pincers	
5.	Table	9
6.	Hand saws	6
7.	Key hold saw	4
8.	Dover tail saw	2
9.	Level screw cramp	10
10.	Claw hammer	10
11.	Arm brace	1
12.	Bismark plance	1
13.	35mm Cameras	5
-	Automatic Extension tube set	2
-	Lenses	2
-	Focusing Rack	2
-	Custom Bellow Attachments	2

II Studio/Drawing Room (ND & HND)

A. Studio

1.	Drawing Boards with Drafting Machine	4 per studio
2.	Light table	2 per studio
3.	Standard drawing tables/stools for students	1 per student
4.	Set of blackboard drawing instruments	2 sets each
5.	Pantograph	1
6.	Overhead projector	1

7.	Projector screens	1
8.	Sides projector	4
9.	Drawing cabinets	4
10.	Sets of drawing pen	4 sets
11.	Lettering set	4 sets
12.	Adjustable set square	4 sets
13.	Enlargement/reduction machine	1
14.	Exhibition board fitted with stands	2 per studio
15.	Large tables of enlargement and reduction	2
16.	Electronic calculators	2
17.	Circle template	4
18.	French curve	4
19.	Elipse template	4
20.	Fixture template	4
21.	Flexible curve	6
22.	Standard T-squares	1 per student
23.	Pencil sharpeners	4
24.	Pocket stereoscopes	10
25.	Scale rules	4

III COMPUTER LABORATORY (ND & HND)

1.	Desk Top computers accessories with necessary softwares	6
2.	Appropriate Computer consumables e.g. journals	

IV PHOTOGRAPHIC STUDIO (ND & HND)

1.	35mm Camera	2
2.	Lenses	2
3.	Automatic extension table set	1
4.	Focusing rock	1
5.	Custom bellows attachment	1
6.	Enlargers (1 black and white: 1 colour)	1
7.	Adjustable printing frame	1
8.	Plastic trays	3
9.	Metal dishes	3
10.	Measuring beakers	2
11.	Trimmer	1
12.	Clock timer	1
13.	Copy stand	1
14.	Plastic development tank	1
15.	Electric dryer	1
16.	Bower exposure metre	1
17.	Brawn electronic flash gun	1
18.	Copy stand	1
19.	Forceps	3
20.	Grip clamps	2
21.	Ultra-violet light developer	1
22.	Laminations machine	1

V. SURVEYING EQUIPMENT STORE (ND only)

1.	Theodolite with tripods	3
2.	Tachometer with tripods	3
3.	Dumpy levels with tripods	3
4.	Prismatic compass with tripods	3
5.	Plane tables with tripods	3
6.	30 meters chains	10
7.	Steel band (100mm)	3
8.	Steel band with accessories (Thermometer spring balance, etc).	3
9.	Levelling staff - upright	3
	- inverted	6
10.	Shoes for leveling staff	6
11.	Set of arrows	10
12.	Plan meters – metric	1
13.	Ranging rods/poles	12
14.	Tapes (measuring tape)	4
15.	Abney levels	3
16.	Optical squares	3
17.	Clinometers	3
18.	Alidade	6
19.	Survey umbrella	2
20.	Red flags	4
21.	Drawers for storing maps	4
22.	Camping tent	2
23.	Four wheel drive	1

**IV. DUPLICATING AND PRINTING ROOM
(Departmental Use)**

1.	Plan printing machine	1
2.	Trimming machine	1
3.	Photostating machine centrally used	1
4.	Duplicating machine centrally used	1
5.	Scanning machine centrally used	1
6.	Steel cabinet	3

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