

## **POSTGRADUATE STUDIES**

### **COURSE DESCRIPTION FOR THE PGD AND M.Tech. PROGRAMMES HARMATTAN SEMESTER (PGD) 700 LEVEL**

#### **ARC 711 ADVANCED DESIGN STUDIO I: 6 Credit units**

An intensive course in design concept formation and quick design solutions, using short and long studio exercises. Emphasis will be laid on creative ideas and fast presentation techniques. Major projects will be used to demonstrate and determine good design ability and good understanding of the design process. Jury system for assessment is used.

#### **ARC 715 WORKING DRAWINGS AND DETAILS: 2 Credit Units**

The preparation of working drawings of complex structures; advanced graphical techniques of presenting information and the range of information required. Scales of working drawings to be 1 in 50 or smaller scales to allow for accuracy of specifications, annotations and site data.

#### **ARC 741 BUILDING COMPONENTS & METHODS VI: 2 Credit Units**

The objective of this course is to explore state-of-the-art building and environmental technologies. Recent advancements in building technology promoting intelligence and automation are reviewed and explorations of a new generation of buildings and building technologies are pursued. The main topics of the course are:

Direction of technological advancements

Building automation and intelligent building technologies

Advanced lighting, day lighting, heating, ventilating, and air- conditioning systems

Prototype buildings of the future

#### **ARC 745 BUILDING STRUCTURES I: 2 Credit Units**

A lecture/ laboratory course to develop understanding of the behaviour of timber, steel and reinforced concrete in structure, to design simple structural elements of these materials and to develop graphic skills in the presentation of design results

#### **ARC 753 RESEARCH METHODS.2 Credit Units**

Develops skills for conducting master's thesis research, including writing a major portion of the thesis document. Engages students as a community of peers sharing ideas and resources for completing thesis work required for admission to the master's thesis design studio.

### **ARC 761 BUILDING SERVICES I: 2 Credit Units**

Sources of water and water distribution; water supply in the rural and urban areas in Nigeria; architecture and water supply. The principles of site drainage and landscape. Waste disposal.

### **ARC 733 TRADITIONAL ARCHITECTURE IN NIGERIA (Elective): 2 Credit Units**

An in-depth study of an aspect of Traditional Architecture in Nigeria. A Research paper will be required detailing studies made and showing relevance of Traditional Architecture to modern Architectural Practice in Nigeria

### **ARC 757 ARCHITECTURAL PRACTICE AND MANAGEMENT II: 2 Credit Units**

Lectures, seminars on office practice, processing plans, for approval by local authorities, professional ethics, and relationship with clients, general public, communities, end users, and other consultants/specialist designers and professional liabilities.

### **ARC 759 HUMAN SETTLEMENTS IN ARCHITECTURE (Elective): 2 Credit Units**

The course will involve research work on transportation in urban Areas, Land Tenure and Uses for Residential, Commercial, Agricultural, Industrial, Recreational and Institutional Purposes. The course further examines the Relevance of Public Transportation, Open Spaces and Services, Network within the Settlements. Housing Types, Settlement Patterns, Human Migrations, Slums, Services in Administration Forms.

## **RAIN SEMESTER 700 LEVEL**

### **ARC 712 ADVANCED DESIGN STUDIO II: 6 Credit Units**

An intensive course in design concept formation and quick design solution, using short and long studio exercises. Emphasis will be laid on creative ideas and fast presentation

techniques. Major projects will be used to demonstrate and determine good design ability and good understanding of the design process.

### **ARC 718 ADVANCED LANDSCAPE DESIGN: 2 Credit Units**

An intensive course in natural and man-made landscapes emphasizing the nature of the built environment and man's interaction with his immediate environment. This course will enhance the student's approach to total design, including the development of site criteria and the use of materials (Plants, Earth Forms, Paving, Furniture, etc.).

### **ARC 742 ADVANCED BUILDING COMPONENTS AND METHOD II: 2 Credit Units**

The goal of this course is to give the student an advanced understanding of the freedoms and restraints which the nature of building materials may impose on design.

An intensive course on the nature and behaviour of building materials such as Timber, Steel, Plastics, Mud, Reinforced Concrete. The design of simple structures using these building materials.

### **ARC 756 PROJECT REPORT: 4 Credit Units**

The student is expected to choose a project guided by his/her supervisor and obtain an approval from the Department. The student will conduct research in the design of the project following appropriate research methodology for the project design. The outcome of this project design following the research methodology is thereafter presented as the Design Project Report.

### **ARC 762 ADVANCED BUILDING SERVICES II: 2 Credit Units**

Solar Energy Applications in Buildings, Renewable Energy. Water Sourcing, Supply, Storage, Servicing, (Cold, Mixed, Warm, Hot) by distribution, water effluents, treatments and recycling. Refuse Collection and Disposal Systems including Recycling. Services for Vertical and Horizontal Movements of Persons, Tools, Machines, Equipment and other Materials. Fire Alarm Systems, Fire Fighting Systems, Fire Prevention Devices. Devices that make a building "SMART" and "EFFICIENT". Sanitation systems fit for the 21st Century Nigeria in Urban and Rural Developments.

Electricity Sourcing, Supply, Distribution, Servicing, Maintenance and Renewals. Services to Hospitals, Schools. Industries, Factories, Housing Estates/Layouts, Offices, Workshops, etc.

### **ARC 764 ENVIRONMENTAL SCIENCES (ELECTIVE): 2 Credit Units**

Lectures and project work will be used in the study of the control of environmental hazards and other considerations relating to the designed environment within buildings, e.g Illumination, Water Supply, Sewage Disposal, Drainage, Electricity, Transportation,

Physical Developments or Redevelopments, Renovations, Demolitions, Erosions, Earthquake, Landslides, etc.

### **ARC 734 RECREATION AND TOURISM IN NIGERIA (ELECTIVE): 2 Credit Units**

Define Recreation. Define Tourism. Outline when they can be combined or separated. Facilities and forms that are required for recreation and/tourism. Since the world is fast becoming “a global small village” show that Nigeria in the 21st Century is part of it and benefiting in the information age with technological advancements in different facets of recreation and tourism.

### **ARC758 PROFESSIONAL PRACTICE AND ETHICS: 2 Credit Units**

This course is intended to provide an opportunity to explore the essential elements of professional practice and related professions. It will equip the student with the fundamental knowledge and skills requisite to an understanding of, and participation in, the conduct of practice in the design profession. Salient areas of administration and management, including organization of the architectural office, professional services of the architect, fee structures and fee management, contracts, and resource management/monitoring/marketing/project delivery are explored in lectures and through case problems.

### **HARMATTAN AND RAIN SEMESTERS 800A&B AND 800C&D LEVELS HARMATTAN SEMESTER 800A**

### **ARC 811A ADVANCED ARCHITECTURAL DESIGN III: 6 Credit Units**

Integrated Project Method (IPM); URBAN STUDIES.

Comprehensive design of complex buildings arising from the study and proposals. Analysis of multiple function architectural and environmental problems with design emphasis on the siting, services and structural determinants of architectural form must be followed. Projects may be drawn from public buildings such as hotel development, educational buildings, administrative buildings, sports complex entertainment buildings etc.

### **ARC 813A ADVANCED URBAN DESIGN I: 1 Credit Unit**

Theories of city organization, heritage of urban form in the developing world. The study of techniques for the design and improvement of the urban environment; the application

of the concepts of urban ecology in the planning of new urban areas and the revitalization of existing city districts.

### **ARC 815A ADVANCED INTERIOR DESIGN: 1 Credit Unit**

Advanced exercises on the design of various types of living spaces, work spaces, recreation spaces and spaces for entertainment.

### **ARC 817A ADVANCED LANDSCAPE THEORY AND DESIGN: 2 Credit Units**

Lecture discussion course on practical landscape design using soft and hard materials design tools in solving major landscape projects such as housing, erosion control, flooding, transportation, public park, forestry, beaches, land reclamation and landscape conservation techniques must be studied.

### **ARC 841A ADVANCED BUILDING COMPONENTS AND METHOD 1: 2 Credit Units**

Complex building constructional elements advanced flooring, roof light, advanced doors and windows curtain walling, infilling panels and solar control in building. An analysis of complex construction methods with emphasis on industrial prefabrication of building materials. Recent advanced building technology; alternatives in construction technique and their appropriateness to the Nigeria situation

### **ARC 845A ADVANCED BUILDING STRUCTURES I: 2 Credit Units**

Introduction to pre-stressed concretes design; the design of steel beams, girders; cantilevers; welded and reverted plates girders and trusses; welded and riveted connections. Columns; bearing plates etc, the plastic method of design. Studio work in calculation and layout of simple steel buildings, mostly the behaviour of various systems and materials.

### **ARC 853A RESEARCH METHODS: 1 Credit Unit**

Participants identify a master's thesis research area, articulate a specific question within the research area, find relevant literature and prepare an annotated bibliography, establish a research method and timetable, pursue preparatory research and analysis for the thesis project, and write, present, and defend a thesis proposal.

### **ARC 861A ADVANCED BUILDING SERVICES I: 2 Credit Units**

Air conditioning systems and other mechanical ventilation devices. Air-conditioning design of air-conditioning requirements for cooling, humidity control and types of air-

conditioning systems. Refrigeration. Advantages and disadvantages of air-conditioning systems. Principles of air movement, special ventilation requirements and mechanical ventilation devices, power supply systems and electrical installations. Communication systems including Remote Control Devices.

**ARC 855A ARCHITECTURAL APPRECIATION (Elective): 1 Credit Unit**

Post-modern movements and their three major tendencies: regional, classical and high-tech movements. Chronological survey and examination of the aesthetic quality of architectural masterpieces in Nigeria and tropical architecture as a whole.

**ARC 857A ARCHITECTURAL PRACTICE AND MANAGEMENT: 2 Credit Units**

Elements of architectural practices; the architectural profession; the architect's registration council of Nigeria; codes of conduct; professional services; setting up a practice; office organization and job organization; personnel management.

**ARC 859A PRINCIPLES OF CONSTRUCTION MANAGEMENT (Elective): 2 Credit Units**

Construction procedures and practices; techniques of project management; client/consultant, contractor and managerial staff relationship. Design and build options. Coordination of specialist designers, subcontractors, suppliers, productivity and physical plants.

**ARC 873A DESIGNS ECONOMICS AND COST PLANNING (Elective): 1 Credit Unit**

The economics of design alternatives; principles of cost planning, construction costs; building lifespan; obsolescence; market value and marketability,

**RAIN SEMESTER800B LEVEL:**

**ARC 812B ADVANCED ARCHITECTURAL DESIGN IV: 6 Credit Units**

Integrated Project Method (IPM); URBAN STUDIES. Comprehensive design of complex buildings arising from the study and proposals. Analysis of multiple function architectural and environmental problems with design emphasis on the sitting, services and structural determinants of architectural form must be followed. Projects will be drawn from advanced public housing estates, high rise housing complex etc.

**ARC 814B ADVANCED URBAN DESIGN II: 2 Credit Units:**

Functional and visual relationships between people and their physical environment; the course examines the scale and scope of urban design, urban design process, environmental design and conservation.

### **ARC 842B ADVANCED BUILDING COMPONENTS AND METHOD II: 2 Credit Units**

The 'whole structure concept' which is the process of integrating the design with the structure, services and detailed construction of a building to fulfil the functional needs namely, strength, usefulness and appearance and coordinated with structures. A study of the inherent obsolescence of buildings, study of new ways of building and whether to conceal or expose the supporting element.

### **ARC 846B ADVANCED BUILDING STRUCTURES II: 2 Credit Units**

In-depth study of the basis of combined carrying-action of the structural elements, the behaviour of various systems and materials. Construction methods of contemporary structures in timber, steel, reinforced concrete and pre-cast concrete.

### **ARC 862B ADVANCED BUILDING SERVICES II: 2 Credit Units:**

Solar Energy Applications in Buildings, Renewable Energy. Water Sourcing, Supply, Storage, Servicing, (Cold, Mixed, Warm, Hot) by distribution, water effluents, treatments and recycling. Refuse Collection and Disposal Systems including Recycling. Services for Vertical and Horizontal Movements of Persons, Tools, Machines, Equipment and other Materials. Fire Alarm Systems, Fire Fighting Systems, Fire Prevention Devices. Devices that make a building "SMART" and "EFFICIENT". Sanitation systems fit for the 21st Century Nigeria in Urban and Rural Developments. Electricity Sourcing, Supply, Distribution, Servicing, Maintenance and Renewals. Services to Hospitals, Schools. Industries, Factories, Housing Estates/Layouts, Offices, Workshops, etc.

### **ARC 864B ADVANCED SUSTAINABLE ARCHITECTURE I: 1 Credit Unit**

Provides an analytical framework and practical tools for implementing sustainability in the built environment, through focus on a central question: how do sustainable development projects move from concept to reality? Presented real-world strategies, tools, systems, and processes that shape the built environment answer that question.

Class Projects should demonstrate the design and construction of high performance buildings and the application of green building technologies. Economics and market development associated with the application of green building rating systems, with a focus on LEED.

### **ARC 872B ADVANCED COMPUTER AIDED DESIGN: 2 Credit Units**

This course is an introduction to CAD solid modelling, and parametric modelling through the use of ArchiCAD or Autodesk Inventor. The course uses an exercise intensive



approach to all the important parametric modelling techniques and concepts. The lessons provide the student the basic concepts of constructing shapes to creating perceptive designs, multi-view drawings, and assembly models. Other topics included are sheet metal or mesh design, motion analysis, collision and contact, and stress analysis. This course introduces the design process through virtual and physical prototyping. Participants will study topics fundamental to rapid prototyping and automated fabrication, including the generation of suitable CAD models. The class will cover the design process, problem solving methods, interdisciplinary team work, current industrial practice, and manufacturing process capabilities. The course emphasizes hands-on learning using the rapid prototyping process by the actual design and fabrication of models.

### **ARC 878B INDUSTRIAL ARCHITECTURE I: 1 Credit Unit:**

Introduction of industrial architecture as a functional design. The influence of the technological process involved. The planning process of an industry; security and safety controls, industries and housing for industrial workers, industrial waste handling and disposal. Principles of furniture design.

### **ARC 866B ENVIRONMENTAL RESOURCES AND MANAGEMENT (Elective): 2 Credit Units**

The concept, of ecology as applied to natural environment; the use and abuse of the natural environment and natural resources; the built environment and environmental planning problems; solutions and conservation for natural environment and build environment.

### **ARC 868B HUMAN SPATIAL ORGANISATION (Elective): 2 Credit Units**

This course will examine in depth the meaning of space, rules of spatial organization, choice of model of design, and the basic problems of space as a dimension of human existence, an understanding of various space concepts as it relates to human environment, perception and defendable space.

### **ARC 876B BUILDING CONSOLIDATION AND ADAPTATION (Elective): 1 Credit Unit**

Consolidation and adaptation of our old architectural heritage at both local and national levels; the principles of consolidation and adaptation (conservation); what is to be protected, organizations responsible for protecting building; local people and their ideas of change; improvement and protection; legislation for conservation; the effect of planning systems and planning applications; environmental caring and curing.

## **HARMATTAN SEMESTER 800C LEVEL**

### **ARC 811C ARCHITECTURAL DESIGN V: 6 Credit Units**



### **(PREREQUISITE PASS IN ARC 811A AND ARC 812B)**

Project: independent work on any approved topic of student's choice. The students must demonstrate proficiency in data collection, site analysis and development as well as design solution. The submission of research paper as a part of the final project will be required. In addition, services, structural technology and acceptable construction methods must be embodied. The presentation must be in acceptable media.

### **ARC 815C WORKING DRAWING: 6 Credit Units**

The preparation of architectural working drawing and construction details and projects specifications for large and complex projects selected from 700 level.

### **ARC 857C PROFESSIONAL PRACTICE AND PROCEDURES: 2 Credit Units**

Lectures, seminars on office practice, processing plans for approval by local authorities, professional ethics, relationship with clients and negotiations for fees and reimbursable expenses, relationship with contractor and consultants and specialist designers. Preparation of contract drawings and documentation. Professional liabilities.

### **ARC 863C ADVANCED SUSTAINABLE ARCHITECTURE II: 2 Credit Units**

Provides an analytical framework and practical tools for implementing sustainability in the built environment, through focus on a central question: how do sustainable development projects move from concept to reality? Presented real-world strategies, tools, systems, and processes that shape the built environment answer that question.

The course focuses on a green Architectural design framework, the Principles of Green Architecture; highlighting the key approaches to advancing sustainability through architectural design. The class begins with discussions on sustainability, metrics, general design processes, and challenges to sustainability. The current approach to design, manufacturing, and disposal is discussed in the context of examples and case studies from various sectors. This provides a basis for what and how to consider when designing products, processes, and systems to contribute to furthering sustainability. The fundamental architectural design topics to be addressed include toxicity and benign alternatives, pollution prevention and source reduction, separations and disassembly, material and energy sciences and flows, systems analysis, bio mimicry, and life cycle design, management, and analysis.

### **ARC 859C PRINCIPLES OF CONSTRUCTION MANAGEMENT (Elective): 2 Credit Units**

Project planning and control, (P.N. PEPT, BARCHART). Scheduling, crashing, optimal solution, construction management, project conception and initiation, project definition

and design construction policy, utility data and time-cost curves, linear programming and use of computers. Approximate estimating, cost in-use, building development, cost control techniques economy of residential development and valuation.

### **ARC 865C ENVIRONMENTAL IMPACT ASSESSMENT (Elective): 2 Credit Units**

Different methods of assessing the impact of proposed development in the physical, social, economic and technological frameworks.

### **ARC 833C TOURISM PLANNING PROCEDURE (Elective): 2 Credit Units**

The meaning of tourism. Tourism and regional/national development elements of tourism. Historical development, potentials and functional tourism resources in Nigeria. Management and organization of tourism on the national economy. Design and implementation conservation of tourist resort centres. Definition of recreation. Supply and demand for recreation resources. Recreation planning studies. The nature, scope and strategies of recreational planning. Recreation resources. Urban indoor and outdoor recreation. Countryside recreational resource development and management. National, regional and local parks, forest, recreation management.

### **ARC 813C URBAN RENEWAL TECHNIQUES (Elective): 2 Credit Units**

Analysis and evaluation of existing urban sprawl. Need and scope of urban restoration. Process of urban restoration. Students may be assigned in groups to follow the urban renewal process to renew given urban sprawl areas.

## **RAIN SEMESTER 800D LEVEL**

### **ARC 812D ADVANCED ARCHITECTURAL DESIGN VII: 12 Credit Units**

This is a product of the thesis report. It offers a student a unique opportunity to acquire knowledge and skills in solving a complex architectural design and planning problem through the execution of a project of his choice. Selected topics, which should be approved at the end of the year. This should normally be connected with national development programme:- economic, social, cultural, industrial etc and should suit the student's own design ability and skills and within the school's ability to supervise. The course involves extensive research, file survey, site visits, cases studies etc. which will be consolidated in complete architectural design proposal which should be well presented with graphics and models of high standard.

### **ARC 854D ARCHITECTURAL DESIGN THESIS REPORT V1: 4 Credit Units**

A thesis or dissertation is prepared under staff's supervision during the last semester of the final year of the programme, preceded by one-term course in research methods.

Each candidate selects an area for investigation previously approved by the department in the semester preceding the thesis. Candidate plans on approach to his findings. The thesis or dissertation may involve experimentation, accumulation of physical data, consultation with recognized authorities, or surveys of opinion and is expected to add significantly to the existing knowledge of the chosen subject.

**ARC 864D BUILDING CLIMATOLOGY (Elective): 2 Credit Units**

Studies in how climate factors affect human comfort, climate decisions in the design process, identification and analysis of climate problem, solar radiation and the control of heat and glare. Thermal characteristics of building materials, study of traditional buildings in the various climatic zones and their problem n- solving potential.

**ARC 858D BUILDING CONSOLIDATION AND ADAPTATION (Elective): 2 Credit Units**

Studies as existing buildings age, the rate of maintenance, refurbishment and conversions increase in all cities. The programme underscores building adaptation as an activity that continues to make a significant contribution to the workload of the construction industry and as such requires the attention of the architect. The course looks at the contribution of buildings to urban decay and reversal procedures.