SECOND YEAR

FIRST SEMESTER

Course Code: **BAR 201**

Course Title: **BUILDING TECHNOLOGY & SERVICES 3 45 Hrs.**

Objective of the Course: To introduce students to the construction process of structures with emphasis on key elements like foundations, exterior wall, columns, beams and slabs.

Course Outline: Lectures that will cover construction process, Earthworks, foundations, exterior wall construction; materials like stone, brick, block composite walls, cavity walls, concrete framing; elements like columns, beams, slabs. Introduction for one family house.

Learning Methods: Lectures and presentations

Evaluation Method: The students are expected to carry out written assignments, case studies or exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Building services, technology and design* by Greeno, Roger, *Building services design: a systemic approach to decision-making* by Thomas W. Maver, *Building services and equipment* by Hall, Fred

Course Code: **BAR 203**
Course Title: **HISTORY AND THEORY OF ARCHITECTURE 3 45 Hrs.**

Objective of the Course: To introduce students aspects of Western architecture and urbanism from the earliest times until the end of Middle Ages as well as theories behind the origin of the modern movement.

Course Outline: Lectures to cover characteristics of western architecture and urbanism from the earliest times until the end of the Middle Ages; the theories behind the origin of the modern movement emphasising the various interpretations of functionalism and its opposition, e.g. art deco, classicism.

Learning Methods: Lectures and presentations

Evaluation Method: The students are expected to carry out written assignments, case studies or exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Architecture : an introduction to the history and theory of the art of building* by Lethaby, William Richard, *A History of architecture* by Statham, Henry Heathcote, *A History of architectural development* by Simpson, Frederick Moore

Course Code: **BAR 205**

Course Title: **BUILDING SCIENCE 1 (Thermal Design) 45 Hrs.**

Objective of the Course: To have students appreciate concept of comfort and stress and the need for environmental control in architecture.

Course Outline: Lectures that covers concept of comfort and stress; importance of environmental control in architecture; human thermal balance and the physiological control; thermal indices and criteria for thermal comfort; thermal design, thermal units, theory of heat flow, thermal properties of materials, heat flow in buildings, steady state and periodic flow; climatological site analysis and application of thermal comfort indices at planning and sketch design stage; heat control, solar radiation and shading devices; solar energy and its application in Architecture; ventilation in buildings; natural and artificial ventilation; and air conditioning in buildings.

Learning Methods: Lectures and presentations

Evaluation Method: The students are expected to carry out written assignments, case studies or exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Mitchell's practical thermal design in buildings* by Burberry, Peter, *Thermal design of buildings; a guide to economically sound thermal design of heated, air conditioned, or refrigerated buildings for use by architects, home builders, and building owners during preliminary design stages* by Rogers, Tyler Stewart, *The design and sizing of active solar thermal systems* by Reddy, T. Agami

Course Code: **BAR 207**

Course Title: **THEORY AND DESIGN OF STRUCTURES 1 45 Hrs.**

Objective of the Course: To introduce the students building structural morphology and effects of structural decisions on architectural design.

Course Outline: Lectures will cover areas of designing of building structure - structural morphology; effects of structural decisions on architectural design; function, economy and aesthetics; classification of structures based on basic analysis - rigid and deformable; building structural systems and special structures; design loading for buildings to relevant specifications; concepts of wind and earthquake loading; loads as applied to engineering members - point and distributed loads; forces of deformation - Nature and effects; force transfer in components; lateral stability; introduction to statics; principles of equilibrium, types of supports reactions, free-body diagrams; resultant analysis by method of joints and graphical.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Design of concrete structures* by Winter, George, *Building structures* by Ambrose, James E., *The analysis and design of light structures* by Owen, John Benjamin Brynmor

Course Code: **BAR 209**
Course Title: **URBAN & REGIONAL PLANNING 45 Hrs.**

Objective of the Course: To have students appreciate land as man's resource. To introduce students aspects of land-use allocation, evolution of human settlements, growth of settlements and legislation on Land, Planning and Development control.

Course Outline: Lectures to cover land-use allocation and how it is determined, evolution of human settlements and the need for planning; Regional Planning and Regional Surveys (objectives, principles and processes); urbanisation and growth of Urban settlements; urban planning and Development control (objectives, principles, processes); introduction to Legislation on Land, Planning and Development control.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination
Learning Resources: Students are expected to refer to *Urban and regional planning* by Hall, Peter

Geoffrey, *Urban and regional planning : a system approach* by Mcloughlin, J B

Course Code: **BAR 213**

Course Title: **ARCHITECTURAL DESIGN 3 180 Hrs.**

Objective of the Course: Provide students with basic understanding of **design process** and **design vocabulary** through a set of graded design exercises as well as Introduction of space structure and form in architecture.

Course Outline: Studio inputs on principles of geometric, structural and spatial organization, routes of movements, image, structure and identity; characteristics and synthesis of space and form, behavior and strength of materials, spanning systems and techniques of construction; use of a varied kit of tools in architectural design and presentation e.g. Photography, freehand, technical drawing, CAD etc; computer graphics, basic modelling techniques, Space and form appreciation, Rendering techniques and presentation techniques; basic principles of photography as medium for recording observation, presentation and communication in Architecture; digital manipulation and editing of still and motion pictures.

Learning Methods: Lectures leading to research and brief formulation in a design project with the aid of Fieldwork and case studies

Evaluation Method: The students are expected to make presentations of field work and case studies. There will be continuous assessment of performance

Final Examination: At the end of semester students are to present/pin-up their portfolio works
Learning Resources: Students are expected to refer to *Architecture: the design experience* by Stubbins and Associates, Hugh, *The crit* by Doidge, Charles

SECOND SEMESTER

Course Code: **BAR 202**

Course Title: **BUILDING TECHNOLOGY & SERVICES 4**

Objective of the Course: To introduce students to material details of various building elements including doors and windows; services installations and regulations.

45 Hrs.

Course Outline: Lectures on Doors in timber and steel; windows in timber and steel; aluminum works; wall finishes and cladding, fairfaced concrete works; interior carpentry, iron walls, paving, street furniture, fountains, plasters; electrical services installation: Power, lighting, communication; fire protection, installation and regulations.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination
Learning Resources: Students are expected to refer to *Building services, technology and design* by

Greeno, Roger, *Design and technology in architecture* by Guise, David

Course Code: **BAR 204**

Course Title: **HISTORY AND THEORY OF ARCHITECTURE 4 45 Hrs.**

Objective of the Course: To elaborate to students the architectural history from seventeenth century to the beginning of the modern movement.

Course Outline: Lectures on the industrial revolution and its effects on the planning and architecture of cities; rebirth of city planning, New materials and processes. Revivals in Arts and Crafts Movement, Art Nouveau, Werkbund, The Chicago School etc; the Bauhaus, De Still, Futurism, C.I.A.M., Team X and the International style, Works of Modern masters; Frank .L.Wright., Le Corbusier, Louis Kahn Alva Aalto etc. 20th century architecture and western urbanism from neo-classicism to the present.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Architecture : an introduction to the history and theory of the art of building* by Lethaby, William Richard, *The history, theory, and criticism of architecture; papers,* edited by Marcus Whiffen. With a foreword by Buford L. Pickens

Course Code: **BAR 206**
Course Title: **BUILDING SCIENCE 2 (Lighting Design) 45 Hrs.**

Objective of the Course: To introduce students lighting and its properties, natural and artificial lighting analysis and design; and lighting design for specialized functions

Course Outline: Lectures to cover the visual mechanism, scotopic and photopic vision, glare and its control, lighting units; natural and artificial lighting analysis and design; lighting design for specialized functions – e.g. auditoria, theaters, studios, exhibitions etc; selection, specification and installation of light fittings.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Electrical design for building construction* by John E. Traister, *Lighting and its design. Drawings* by Donald Hanson, *Lighting Design in buildings* by Boud, John

Course Code: **BAR 208**

Course Title: **THEORY AND DESIGN OF STRUCTURES 2**

45 Hrs.

Objective of the Course: To introduce students to Mechanical properties of structural materials,

relationship between stress and strain, elastic constants, and concept of permissible stresses. Also, Design of structural steel work.

Course Outline: Lectures to cover areas of Approximate values. Beams-classification, SF and BM calculations for cantilever, simply-supported and over-hang beams. Deformations of beams in pure bending - Navier's theorem. Shear stresses in bending - general expression. Section properties - centroid, first and second moment of areas and radius of gyration. Section modulus. Deflection of beams. Application in rectangular, circular and 1-sections. Structures steel - properties, available structural steel sections, designation and grades. Hot rolled and cold-formed members. Design of structural steel work; principles of design by BS 449 and BS 5950. Elastic design of structural steel components: simply supported beams, columns, and angle members (purlings, cladding, sheeting, truss components.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Elementary theory of structures* by Grassie, James C., *The theory of structures* by Mills, Gordorn Manchester, *Structural theory and design* by Young, J. Mettardy, *Structures for architects* by Gauld, Bryan J.B.

Course Code: **BAR 210**
Course Title: **INTERIOR ARCHITECTURE 1 45 Hrs.**

Objective of the Course: To introduce students to appropriate sensory mechanism of the human body Tactile, visual, audio sensory mechanisms.

Course Outline: Series of lectures to cover how to determine the amount of internal space required. Area and volume of space Vis a Vis the function characteristics of internal surface finish materials. Texture, colour, reflectance/absorbency of light and sound, durability and maintenance. Lighting application in interior design - Natural and artificial. Furniture and fittings - materials design, colour, layout. Internal circulation and space use. Presentation of interior design information.

Learning Methods: Lectures

Evaluation Method: The students are expected to carry out written assignments, exercises and sit for a continuous assessment test(s)

Final Examination: At the end of semester students are to sit for a two hour written examination

Learning Resources: Students are expected to refer to *Interior spaces designed by architects* by Gordon, Barclay F., *Universal interior design : gracious spaces* by Dobkin, Irma, *Time - saver standards for interior design and space planning* by Dechiara, J. Panero

Course Code: **BAR 214**
Course Title: **ARCHITECTURAL DESIGN 4 180 Hrs.**

Objective of the Course: To provide students with basic understanding of **design issues** and **design language** through a set of graded design exercises.

Course Outline: Studio input to cover basic skills in the use of various materials and media for design expression. Basic understanding of design morphology, Space and form making elements, spatial and structural order, routes of movement and principles of organization. Correlation of anthropometrics and functions. Advance skills for architectural presentation and rendering techniques. Use of thumb sketches, thematic sketches, axonometric and perspectives models etc. In design formulation and presentation. Advanced skills in Computer Aided Architectural Design, drafting, rendering and presentation techniques.

Learning Methods: Studio lectures and crits leading to research and brief formulation in a design project with the aid of Fieldwork and case studies

Evaluation Method: The students are expected to make presentations of field work and case studies. There will be continuous assessment of performance

Final Examination: At the end of semester students are to present/pin-up their portfolio works

Learning Resources: Students are expected to refer to *Approach to architectural design* by Isaac, Alan Reginald George, *Architecture: the design experience* by Stubbins and Associates, Hugh, *Design in architecture: architecture and the human sciences* by Broadbent, Geoffrey, *Designing for human behavior: architecture and the behavioral sciences.* Edited by Jon Lang [and others]