

## **THIRD YEAR**

### **FIRST SEMESTER**

Course Code: **BAR 301**

Course Title: **BUILDING TECHNOLOGY & SERVICES 5 45 Hrs.**

Objective of the Course: To provide students with insight on matters walling, expansion and settlement joints, roofing, finishes, services and ventilation.

Course Outline: Lectures and presentations in the following topics; retaining walls, basement wall construction interior walls. Expansion and settlements joints Timber construction. Flat roof finishes, pitched roof structures and finishes. Floor finishes. Staircase in concrete, steel timber, sanitary services; cold and hot water supply, storm and sanitary drainage, sewage treatment, Refuse disposal. Ventilation: Natural and artificial heating and cooling services installation.

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 technology* by Seeley, Ivor H., *A Textbook of building construction* by Sharma, S.K., *Design and technology in architecture* by Guise, David, *Construction technology* by R. Chudley

Course Code: **BAR 303**

Course Title: **THEORY AND DESIGN OF STRUCTURES 3 45 Hrs.**

Objective of the Course: To introduce students to aspects and design of concrete; grades, production, properties, uses and quality control.

Course Outline: Lectures to cover Concrete design; ingredients and admixtures. Concrete grades and design of mixes. Site production storing, batching and mixing, transport, placing and compacting construction joints and concreting in hot weather. Curing and finishing. Control of concrete quality - tests on fresh and hardened concrete. Reinforcement k-bar sizes and dimensions. Fixing. Formwork - types, basis of design, surface treatment, striking of formwork and care. Properties of reinforced concrete. Reinforced concrete design - principles of design by CP 114, CP 110 and BS 8110 - beams, slabs stair slabs, columns and foundations in short and medium rise buildings design concept in high rise buildings.

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 *Composition and properties of concrete* by Troxell, George Earl, *Concrete and concreting* by Tretyakov, A., *Concrete and reinforced concrete construction* by Reid, Homer Austin, *Concrete construction*, by Chas. E. Reynolds

Course Code: **BAR 305**

Course Title: **LANDSCAPE ARCHITECTURE 1 45 Hrs.** Objective of the Course: To introduce students' landform, site analysis and site planning

Course Outline: Lectures and presentations in landform, site analysis and site planning. Design of small and medium sized sites with particular regard to sense of place and the development of innovative and expressive design; the relationship between site use and site design; the application of planting design and concepts to a design situation; concepts of site design theory: spatial experience and landscape meaning; preparation of presentation graphics and models. Use of CAD. Professional practice. Codes 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 *Landscape architecture construction* by Landphair, Harlow C., *Landscape architecture: the shaping of man's natural environment* by Simonds, John Ormsbee, *Landscape detailing* by Littlewood, Michael, *Landscape graphics : plan, section, and perspectives drawing of landscape spaces* by Reid, Grant W.

Course Code: **BAR 307**

Course Title: **ELEMENTS OF LAW 45 Hrs.** Objective of the Course: To provide insight on matters law; sources and elements of law, and contracts.

Course Outline: Lectures covering nature and meaning of law; sources of law ;classification of laws; the court structure, separation of powers; the judiciary, the executive and the legislature; some elements of property, personal and tort law affecting Architecture. Elements of the law of equity. Formation of contracts, essential requirements for a valid contract, factors vitiating a valid contract, privity of contract, discharge of contracts, remedies for breach of contracts. Principles agency and partnership law.

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 *Elements of law* by Hanks, Eva H., *Elements of the law of contract* by Carter, Albert Thomas, *Elements of company law* by Farrar, Harry, *Elements of English law* by Geldart, William

Course Code: **BAR 309**

Course Title: **ARCHITECTURAL CONSERVATION 1 45 Hrs.**

Objective of the Course: To introduce history of conservation, conservation process, designing for conservation and laws and ordinances governing conservation.

Course Outline: Lectures and presentations providing insight on the need and history of conservation, what need to be conserved; the conservation process, identification and survey of the works, designing for conservation, technology for conservation and refurbishment, funding and implementation of conservation projects. Designing for harmony between the "old" and the "new". The practice of conservation. Laws and ordinances governing conservation.

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 *Adaptive reuse: issues and case studies in building preservation* by Austin, Richard L., *Conserving buildings: guide to techniques and materials* by Weaver, Martin E., *Planning for conservation* by Kain, Roger J.P., *A visual approach to urban conservation* by Burke, Gerald

Course Code: **BAR 313**

Course Title: **ARCHITECTURAL DESIGN 5 180 Hrs.**

Objective of the Course: To help students appreciate the process and parameters for small-scale projects of primary social groups and their institutions.

Course Outline: Studio input and lectures in the design process and parameters for small-scale projects of primary social groups and their institutions. Evolving structural order in design correlating to spatial needs. Design for social structures and institutions, issues of cultural and organizational principles, simple environmental controls etc.

Brief formulation and reports, Site analysis and investigation, social and physical environment. Landscape design. Topographical survey.

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 *Analysing architecture* by Unwin, Simon, *Component design* by Stacey, Michael, *Design strategies in architecture: an approach to the analysis of form* by Baker, Geoffrey Howard, *Architectural design procedures* by Thompson, Arthur, *Design and detail of the space between buildings* by Beazley, Elizabeth

## **SECOND SEMESTER**

Course Code: **BAR 302**

Course Title: **BUILDING TECHNOLOGY & SERVICES 6 45 Hrs.**

Objective of the Course: To introduce students building systems, advanced building technology and breakthroughs, preparation of building owners manual, structure of the building industry in Kenya and its trends and construction Information Management System (CIMS)

Course Outline: Lectures to cover building systems, Prefabrication and modular design, standardization. Special topics: Introduction to advanced building technology and breakthroughs, technological reviews of contemporary projects of national and international importance. Services to complex buildings. Specification writing; Need, form, order and procedure of specification writing. Building defects and maintenance technology. Preparation of building owners manual. Structure of the building industry in Kenya and its trends. Construction Information Management System (CIMS)

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 design: a systemic approach to decision-making* by Thomas W. Maver, *Building services, technology and design* by Greeno, Roger, *Environment and services* by Burberry, Peter, *handbook of utilities and services for buildings : planning, design and installation* by Harris, Cyril M.

Course Code: **BAR 304**

Course Title: **HISTORY AND THEORY OF ARCHITECTURE 5 45 Hrs.**

Objective of the Course: To provide insight on theories of Growth systems for space, form and Spatial Order; and analytical methods for design appraisal.

Course Outline: Lectures to cover the present state: a multiplicity of theories; an exploration of the most prominent ideas and personalities in the Third World. Outline of Architectural development in Kenya. Principles and constants in traditional African Architecture - its vitality in contemporary context. Built form transformations of an urbanizing culture. Exotic and vernacular architecture and urban design.

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, *John Webb: architectural theory and practice in the seventeenth century* by Bold, John, *A General history of architecture from the earliest civilizations to the present day* by Allsopp, Bruce

Course Code: **BAR 306**

Course Title: **SURVEYING 45 Hrs.**

Objective of the Course: To have students appreciate the role of Surveying in Architecture; use and interpretation of survey maps and plans; methods and equipment of surveying; electronic surveying and application of survey principles and instruments in building construction and related civil Engineering works.

Course Outline: Lectures to cover use and interpretation of survey maps and plans; methods and Equipment of surveying, chain surveying - Equipment, procedure, plotting, locating existing features. Introduction to electronic surveying – GPS, GIS, satellite imaging and digital maps, remote sensing. Software and hardware in electronic surveying. Production of survey drawings. Application of survey principles and instruments in building construction and related civil Engineering works.

Leveling and contours - equipment, procedures, reducing and plotting. 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 *Surveying: elementary and advanced* by Rayner, William Horace, *Surveying*, by Charles B. Breed. Rev. by Alexander J. Bone and B. Austin Barry, *Text book of photogrammetry* by Zeller, Max, *Textbook of surveying* by Shahani, P.B.

Course Code: **BAR 308**

Course Title: **BUILDING SCIENCE 3 [Acoustics] 45 Hrs.**

Objective of the Course: To have students appreciate and design architectural acoustics

Course Outline: Lectures to cover introduction to architectural acoustics; the hearing mechanisms and properties of sound. Behaviour of sound in the open field. Background noise and audio comfort criteria. Measurement of sound levels and values. Room acoustics and noise control – reflection, absorption and transmission of sound. Room acoustics: reverberation time, volume, and materials, acoustic design principles for specialised functions – E.g. theaters, auditoria, broadcasting studio etc. Sound reinforcement systems – requirements, specification and installation.

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 *Acoustic design* by Templeton, Duncan, *Acoustics* by Mackenzie, George White, *Acoustics and noise control* by Smith, Brian John, *Acoustics for the architect* [by] Harold Burris-Meyer & Lewis S. Goodfriend

17

Course Code: **BAR 310**

Course Title: **HOUSING & HUMAN SETTLEMENTS 45 Hrs.**

Objective of the Course: To introduce students to National and Global need for Housing, Socio-cultural parameters of housing and settlements.

Course Outline: Lectures in the areas of introduction to National and Global need for Housing, Socio-cultural parameters of housing and settlements. Economic and political parameters of Housing. Urban and rural Housing Strategies: Social Economic and Financial, Cultural and Technological Strategies. Introduction to issues of settlement planning : Zoning, densities and density control, infrastructures and services, Typology of dwellings, cost control and ownership.

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 *Habitat : human settlements in an urban age* by Gunn, Angus M., *Human settlements: crisis and opportunity*, by Barbara Ward, *The Planning and management of human settlements with special emphasis on participation* by Hill, Dilys M., *Strategies for human settlements: habitat and environment* by Bell, Gwen

Course Code: **BAR 314**

Course Title: **ARCHITECTURAL DESIGN 6 180Hrs**

Objective of the Course: To have students appreciate the design process and parameters for medium scale projects in urban contexts.

Course Outline: Studio inputs in aspects of the design process and parameters for medium scale projects in urban contexts; urban and building morphological surveys; mixed urban developments; materials, materiality and fittings, building services, codes and regulations; architectural detailing, Working drawings and specifications.

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 *Architecture: the design experience* by [Stubbins](#)

[and Associates, Hugh, \*The crit\* by \[Doidge, Charles\]\(#\)](#)

*One elective unit to be taken from the stream already chosen*

Course Code: **BAR 320**

Course Title: **ARCHITECTURAL CONSERVATION 2 45 Hrs.**

Objective of the Course: To introduce students practical skills in stonemasonry, joinery, painting plasterwork and roofing; sheet cladding & external finishes; structures and stability of historic works; traditional and modern building technology and materials, principles of building decay, conservation maintenance, fire safety in historic buildings.

Course Outline: Lectures to cover the introduction to practical skills in stonemasonry, joinery, painting plasterwork and roofing. Sheet cladding & external finishes. Structures and stability of historic works. Traditional and modern building technology and materials, principles of building decay, conservation maintenance, fire safety in historic buildings. Conservation management and funding. Building defects, repairs and conversion. The theory and practice of urban conservation. Urban conservation in a town planning context. Conservation and urban design issues in historic towns. Current planning practice in major conservation areas: Lamu, stone town - Mombasa, Zanzibar, traditional and historic settlements. Roles played by national and local agencies.

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 *Adaptive reuse: issues and case studies in building preservation* by Austin, Richard L., *Conservation Concerns* by Bachmann, Konstanze, *Conservation in practice* by Warren, Andrew

Course Code: **BAR 322**

Course Title: **INTERIOR ARCHITECTURE 2 45 Hrs.**

Objective of the Course: To provide insight on the relationships between ideas and architectural space as related to human culture.

Course Outline: Lectures to cover fundamental study of the relationships between ideas and architectural space as related to human culture. Conditions of existence - matter, form, life time and space. Sociocultural perspectives on design and dwelling. Place and setting, and aesthetics and senses in design. Environmental perception and cognition, personal space and territoriality, anthropometrics and ergonomics as well as ambient conditions. Tectonics and composition, human environmental and design processes scale and order. Scale and order, aspects of the individual and the community. Computer-aided interior design. Student use of CAD equipment and production of design. Professional practice: Codes and regulations governing the practice of interior architecture

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 324**

Course Title: **LANDSCAPE ARCHITECTURE 2 45 Hrs.**

Objective of the Course: To provide students with a comparative international review of the relationship between design and culture with particular reference to landscape architectural history: Japanese, Chinese, European, African etc.

Course Outline: Lectures on comparative international review of the relationship between design and culture with particular reference to landscape architectural history: Japanese, Chinese, European, African etc.; working drawings, walls, fences and retaining walls, types of joints and fixings in a range of basic hard materials, decking and pergolas, unit paving and concrete, changes in level, contours and spot heights, stormwater drainage, earthworks, water, play and playgrounds, and site furniture.

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 *Landscape architecture construction* by Landphair, Harlow C., *Landscape architecture; the shaping of man's natural environment* by Simonds, John Ormsbee, *Landscape detailing* by Littlewood, Michael, *Landscape graphics : plan, section, and perspectives drawing of landscape spaces* by Reid, Grant W.