

Course Descriptions

(B.Sc. in Architectural Engineering)

(a) 200 1010 Introduction to Design (1, 4, 0: 3)

1) pre-requisite: none

The course covers the development of the sensory perception of abstract form and its ultimate conversion into specific architectonic configurations, relevant to a variety of solutions to a specific problem and leading to the process of selection and decision making. Basic principles of aesthetics through the study of form, space, proportion, texture analysis of color theory conditioned by different media and materials are also covered.

(b) 200 1020 Perspective, Shades and Shadows (1, 4, 0: 3)

1) pre-requisite: 2711000

The course covers one point and two points exterior and interior perspectives, and fundamentals of drawing shades and shadows as presented in two-dimensional and three-dimensional parallel-line drawings by applying projection.

(c) 2711000 Engineering Graphics (2, 2, 0: 3)

1) pre-requisite: none

The course covers the basics of 2-D and 3-D architectural drawing and presentation. Parallel-line drawings and orthogonal projections are covered. Drawing of all architectural elements, renderings (abstraction, textures, and materials), and lettering are practiced.

(d) 270 1011 Building Sciences (3, 0, 0: 3)

1) pre-requisite: none

This course aims to familiarize students with the basic principles and means of measurement and design of technical aspects of building science. It also covers incorporating structural design, environmental principles, material science and human factors and how these topics rely upon and influence one another in architectural design.

(e) 270 1020 Architectural Design I (2, 4, 0: 4)

1) pre-requisite: 2001010

The course covers elements and principles of architectural design; form, space/volume, and function and their interrelationships, in addition to basic design requirements through a small-scale project(s) (e.g. single family house, studio).

(f) 270 2030 Architectural Design II (2, 4, 0: 4)

1) pre-requisite: 270 1020

The course covers simple and single-use architectural project(s); aspects of spatial arrangements, site, climate and traditions are to be examined. (e.g., kindergarten, small clinic, art workshop).

(g) 270 2040 Architectural Design III (2, 6, 0: 5)

1) pre-requisite: 270 2030

Design process, conceptualization, and creativity are practiced by students. The problem of space formation, and form/function interaction are also covered. Students handle design problems related to large span single-use spaces; issues of structural systems and light weight material are applied. Contextual design elements of site, topography, climate and traditional architecture are identified, and conceptual design solution(s) analyzed.

(h) 270 2151 Ancient Architecture (3, 0, 0: 3: 3)

1) pre-requisite: none

The course provides an overview of the prehistoric, early historic and classical periods. Emphasis is laid upon design concepts shaping both secular and religious buildings that made up the built environment. Comparative analysis of several buildings is presented in their contextual settings reflecting socioeconomic aspects, culture and traditions, climatic conditions, religious beliefs and building needs of societies.

The course provides an overview of the architecture of major periods of Western history, ranging from the Early Christian Period to the Renaissance. The course introduces students to the ancient philosophies relating to space, urban space and conceptual meaning in architectural design. Also presented are the concepts underlying heritage, ranging from the Early Christian era and passing through the Byzantine, Romanesque, Gothic and Renaissance eras.

(i) 271 2230 Building Construction I (2, 2, 0: 3)

1) pre-requisite: 2711000

The course provides an overview of basic concepts and properties of building structural components and their materials. The course discusses elements and types of superstructure, substructure and foundations. It covers linear and planar, vertical and horizontal, structural systems and their members such as short–medium span roofing, flooring, walls, columns, girders and beams.

(j) 275 2030 Surveying for Architects (1, 2, 0: 2)

1) pre-requisite: none

The course covers basic surveying, errors in surveying operations, distance measurements, chain surveying, angles measurements and bearings, coordinate geometry, leveling of profiles and cross section contour lines, areas and volume computations. Lab work includes the use of the theodolite and planimeter for area measurement.

(k) 271 2240 Building Construction II (2, 2, 0: 3)

1) pre-requisite: 271 2230

Topics covered include wood systems and carpentry and means of vertical circulation (stairs, elevators and escalators). The course provides an insight of materials and detailing of walls, floors, false ceilings, doors, windows, thermal insulation, sound isolation, water proofing and building joints.

(l) 275 2040 Structural Design for Architects I (3, 0, 0: 3)

1) pre-requisites: 270 1011 & 217 1010

The course provides an introduction to the statics of structures and structural members and deals with supports and springs. It discusses the analysis of determinate and indeterminate structures.

(m) 270 2340 CAAD I (1, 4, 0: 3)

1) pre-requisites: 104 1100 & 2711000

The course covers the advantages of CAAD over the traditional design process, mastering AutoCAD 2000 software as a tool of CAAD design, and places emphasis on the 2D AutoCAD, with an introduction of 3D AutoCAD.

(n) 270 3152 Islamic Architecture (3, 0, 0: 3)

1) pre-requisite: 270 2151

The course presents the social, political, economic and religious values that have helped the evolution of the built environment and the ensuring of significant architectural development. Examples of historical Islamic buildings of various countries are selected to analyze their unique design concepts. A study and comparative analysis is made of key elements of Islamic architecture: cities and buildings such as mosques, market, places and housing.

New theories in Architecture, based on revolutionary design concepts, unique built forms, the use of new materials and techniques are introduced. Emphasis is placed on understanding the process of design and building through the masterpieces of pioneering architects of selected historic eras. A review of the various early 19C revivals of historic forms and eclecticism, which triggered the rise of modern architecture, is presented. Post-modern theories and the current evolution of architectural theories are also explored.

(u) 271 3260 Working Drawings 1 (1, 4, 0: 3)

1) pre-requisite: 271 3251

The course covers the preparation of working drawings for an architectural project applying all theoretical and practical knowledge gained during the study of engineering graphics, building construction and related courses.

(v) 270 3460 Housing Theory & Design (3, 0, 0: 3)

1) pre-requisite: 270 2040

The course covers the major processes, design considerations and computations for accomplishing residential housing development projects. Other topics include phases of the development process, site evaluation considerations include those relating to boundary surveys, topographic evaluation, soil analysis, traffic evaluation, hydrographic analysis, plus environmental, aesthetic and cultural considerations.

(w) 270 3560 Landscape Architecture (2, 2, 0: 3)

1) pre-requisite: 270 2030

The course offers an introduction to the history and development of landscape architecture, and the technology and methods of landscape design. The processes of landscape design as applied to complex projects in landscape architecture, including proposal, programming, analysis, concept development and presentation are also covered.

(x) 2713271 Building Services (3, 0, 0: 3)

1) pre-requisite: 2713251

This course provides students with the knowledge of various aspects of building technical installations required. The course will cover various technical issues such as mechanical and sanitary in buildings, water and air quality, waste, fire protection and safety. In addition it will cover air conditioning systems, and electrical installations in buildings.

(y) 270 4070 Architectural Design VI (2, 6, 0: 5)

1) pre-requisite: 270 3060

The course covers process of developing a program for functional/environmental requirements of the determined project, setting up solutions for the concerned design problem and selecting the relevant site for the developed program. Taking into account the real needs of local society, students are also introduced to the process of analysis and synthesis, and evaluation of large scale design problems.

(z) 271 4270 Working Drawings 2 (1, 4, 0: 3)

1) pre-requisite: 271 3260

The course covers plans, layouts, schedules and details. Building systems such as architectural, structural, mechanical, electrical and telephone systems are also covered.

(aa) 2703475 Active Thermal Environmental Control (2, 2, 0: 3)

1) pre-requisite: 270 1011

The course covers the basics of active thermal systems and their technology, energy demand limits, heat loss and gain, calculations, measurements and applications, and offers a link up with architectural design.

(bb) 271 4480 Lighting & Acoustics in Architecture (3, 0, 0: 3)

1) pre-requisite: 270 1011 & 2713271

The course introduces lighting and acoustic terms and means of measurement and design, characteristics of light and sound, building standards and materials.

(cc) 270 4580 Urban Planning (3, 0, 0: 3)

1) pre-requisite: 270 3560

Course topics include the evolution of city form and structure, the development of order and organization in cities, theories of planning, the politics of planning, social and cultural contexts, the planning process and models, and planning management and implementation.

(dd) 270 4590 Urban Design (2, 6, 0: 5)

1) pre-requisite: 270 4070

The course introduces urban design concepts and urban scale architecture, urban design structure and elements, the urban design process; surveying, analysis and evaluation. Project management and presentation are also covered.

(ee) 270 4601 Environmental Behavior (3,0,0:3)

1) Pre-requisite: None

The course teaches the students how to apply the psychological and aesthetic factors in the design projects. The course covers the psychological relationship between people and design. Introduction to psychology, perception in architectural elements, color psychology, space psychology, and the impact of psychology in balance, harmony, rhythm, and emphasis.

(ff) 270 4680 Heritage Conservation (3, 0, 0: 3)

1) pre-requisite: 270 2152

The course introduces the history of the conservation movement, international and local conservation programs, regulatory instruments, methods and techniques. Case studies are presented, and conservation experience in the UAE is covered.

(gg) 270 5890 graduation project 1 (3, 4, 0: 5)

1) pre-requisites: 270 4590 & 270 3460

Students carry out a substantial work of design research presented as a short thesis report, entailing practical application to a researched topic of a specific building type (a complex multi-use design problem). Project selection is based on the real needs of UAE society. Methodology in architectural design through a process of programming is covered, together with a literature review, data collection, statistics, case study critique, developed architectural program and schematic design concepts.

(hh) 270 5590 Architecture Practice (3, 0, 0: 3)

1) Pre-requisite: 2713271

An overview to the professional practice in architecture in general with special emphasis on the UAE. Professionalism, the architect's role in the building process in real life, how architects work and get work, becoming and being an architect are also covered. Course topics also include code of ethics, team work, design and design approvals, decision making field investigation, engineers and other consultants, construction contractors, building contracts, bill of quantities and book of specifications, phases of construction and construction management process.

(ii) 270 5900 Graduation Project ii (1, 8, 0: 5)

1) Pre-requisite: 270 5890

The course covers the development of the schematic concept formulated during Graduation Project I, the development of design preliminary drawings in accordance with the architectural

design program formulated in Graduation Project I, rendering and presentation of the design final drawings, and the use of advanced CAAD application.

(jj) 2735110 Sustainable Architecture (3, 0, 0, 3)

1) Pre-requisite: 2703475

This course aims to introduce students to basic concepts of sustainable design and its application in architecture considering environment and lifecycle of buildings, and also to provide students with comprehensive understanding of many ecological approaches.

(kk) 2705600 Project Management (3, 0, 0, 3)

The course will assist the student to understand the position of a manager on site. The in depth study will train the student to apply various aspects of project management such as; organization planning, implementation, controlling tasks, project scheduling, cost controlling, and performance evolution.

(ll) 273 500 Selected topics in Architecture (3, 0, 0: 3)

1) Pre-requisite: None

Selected topics are researched and discussed according to the educational needs of the students involved.

(mm) 273 501 Interior Design and Coloring (1, 4, 0: 3)

1) Pre-requisite: None

The course covers interior design and coloring with emphasis on water color technique, poster color and pencil color and interior space coloring.

(nn) 273 506 Advanced CAAD Application (1, 4, 0: 3)

1) Pre-requisite: 270 3350

The course concentrates on scientific study basics of the architectural graphic program (ArchiCAD). Principles of electronic drafting and its capabilities comparing most available drawing programs, especially AutoCAD and ArchiCAD is also covered, as are philosophy and characters in achieving general two- and three-dimensional engineering drawings.

(oo) 273 507 Design AND Research Methods (3, 0, 0: 3) Pre-requisite: None

The course covers a comprehensive survey of qualitative and quantitative research methods and their method-specific hypothesis formulation, data acquisition, verification and analysis.

(pp) 273508 Geographic Information Systems (1, 4, 0: 3)

1) pre requisite 2703350

The development and history of GIS, present applications of the technology. Essential elements of a Geographic Information System. Basic concepts and principles of Geographic Information Systems.

(qq) 273504 Photography (1, 4, 0: 3)

1) pre requisite none

This is an introductory course to photography. It deals with the principles of photography such as light exposures, compositions, and film developing. Types and uses of cameras, lenses, flashes, filters, and other accessories are discussed and applied. The course also involves photographing buildings and students' projects, portfolio design, and the use of digital cameras.

(rr) 273509 Contemporary Architecture in the Arab World (3, 0, 0: 3)

1) pre requisite 2703153

This course will introduce students with recent architectural trends and developments in the Arab World during the 20th century and the present time. Architectural changes and transformations

from tradition to modernity during the 20th century are to be investigated. The different architectural trends and attitudes in Arab countries are explored through analyzing examples of the pioneers of contemporary Arab architecture, such as Fathy, Badran, Makkiyyeh and Chadirji.

This course aims to introduce students to basic theories, concepts and methods of scientific

(ss) 273510 Interior Architecture (1, 4, 0: 3)

1) pre requisite none

This course will enhance students' skills in interior space drawing and coloring, identify color theories and how to apply in interior spaces, color plans with different techniques, develop basic color skills for residential and public spaces, and produce 3d's drawing using water color and poster color.

(tt) 273502 Real Estate Development (3, 0, 0: 3)

1) pre requisite none

The course will conduct market surveys and analysis studies, site consideration and selection, financial feasibility and documentation for real estate development. The students will be introduced to carry forth a real estate development project from the proposal (project formation) stage into final proposal. Manage project more effectively. Keep a project notebook, or digital file. Develop a scope of work, diagram workflow on a timeline, and use it to plan and manage activities effectively. Also, draw upon what they have learned in other courses.

uu) 2735070 Research and design Methods (3, 0, 0: 3)

1) Pre-Requisite: 2703060.

research and their relevance to architectural design and programming.