

Bachelor of Architecture

Courses description

Course Descriptions for Courses Offered by the Bachelor of Architecture Program

ARCH 113 Free Hand Sketching (1:0:3)

Pre-requisite(s): None

Means of expression in free hand sketching of forms and natural settings. Sketching including different plants, objects and people using pencil, ink and other presentation media with special emphasis on the aesthetic proportions of objects. The course incorporates the basic principles of perspective drawing, shade and shadow and rendering techniques.

ARCH 114 Technical Graphics (2:0:6)

Pre-requisite(s): None

A course that depends primarily on the development of manual drawing skills. It is based on use of instruments and equipment necessary for accurate drafting of simple geometric constructions gradually evolved into orthogonal – isometric and axonometric – projections, planes, sections and elevations.

ARCH 115 Architectural Drawing and Presentation (3:1:6)

Pre-requisite(s): ARCH 113

Various manual and computer techniques of drafting 2D and 3D architectural expressions and projections. Techniques of drawing plans, sections, elevations, interior and exterior Perspective drawings using one and two vanishing points. The effect of shade and shadow on architectural drawings. Using a graphics and image editing software.

ARCH 121 Basic Design 1 (4:0:12)

Pre-requisite(s): None

An introduction to the basic design components: subject, form, content, with a focus on their dynamic interrelation. Through observation, analysis, discussion of traditional and contemporary approaches in fine arts, architecture and interior design, students learn to apply the elements and principles of visual organization to creative projects using various media.

ARCH 122 Basic Design 2 (4:0:12)

Pre-requisite(s): ARCH 121

The course introduces basics of design process and theory as it relates to the 3-dimensional world. Students are involved in hand-on exploration of simple structures and spaces using diverse materials and textures. Space function, volume, mass are discovered through designing a small-scale residential space(s), where design elements/principles are applied.

ARCH 221 Architectural Design Studio 1 (4:0:12)

Pre-requisite(s): ARCH 122

Introduction to the application of design principles in architecture and to the technical conventions and expressions. Focus on elementary architectural design as it relates to function, structure, site, land plot and the environment.

ARCH 222 Architectural Design Studio 2 (4:0:12)

Pre-requisite(s): ARCH 221

Design of medium scale buildings with an integrated program and moderate site conditions. Emphasis on human centered design process, impact of human and climatic factors on design solutions. Exploration of sustainability and particularly natural ventilation, daylighting, building materials in regards to the design intent and environment.

ARCH 223 Computer Architectural Drawing (2:1:3)

Pre-requisite(s): ARCH 115

Concepts, features and applications related to Building Information Modeling (BIM) are introduced. Students explore Autodesk® Revit Architecture structure, features, modeling and editing techniques, sheet creation and organization. Emphasis on modelling BIM models and rendering 2D and 3D interiors and exteriors (including site), furnishings, accessories and details for architectural projects.

ARCH 231 Building Construction 1 (3:2:3)

Pre-requisite(s): ARCH 114

This course aims to introduce building materials, their properties, the impact of building materials and construction on environment and building codes. It focuses on sustainable methods of building technology as it relates to the site and construction and explores building systems, structures' types and elements (including foundations).

ARCH 232 Building Construction 2 (3:2:3)

Pre-requisite(s): ARCH 231

This course explores materials and buildings technologies employed in building envelope (including windows, doors, other openings) and interior construction (including fixtures, fitments, built-ins) and systems, thermal and acoustic insulation, waterproofing and damp proofing. Accents on selection of materials and building technologies with minimal negative impact on environment.

ARCH 241 History & Theory of Architecture 1 (3:3:0)

Pre-requisite(s): ARCH 122

Introduction to history of art and architecture, and their development through the ancient civilizations of Egypt, Mesopotamia, Greece and Rome. Analysis of historical monuments and buildings and their architectural characteristics. Emphasis on the Architectural principles, theories, and impact on the development of buildings throughout ancient times. Examining ancient historical patterns.

ARCH 242 History & Theory of Architecture 2 (3:3:0)

Pre-requisite(s): ARCH 241

Introduction to Early Christianity Architecture during the middle Ages in Europe. The course begins with the origins of Christian architecture of the Early Christianity, Byzantine Architecture, Romanesque Architecture Gothic, Gothic Style in France and England, Gothic Style in Italy. The course concludes with the Architecture of the Baroque and Renaissance age.

ARCH 321 Architectural Design Studio 3 (4:0:12)

Pre-requisite(s): ARCH 222

Design of a building or a group of buildings with moderate complexity through different spatial, formal and functional strategies. Consideration of psychological, environmental and technical requirements influencing architecture and design. Experiment with green buildings design and explore passive design solutions.

ARCH 322 Architectural Design Studio 4 (4:0:12)

Pre-requisite(s): ARCH 321

Create sustainable multifunctional buildings or a group of buildings design, within an urban context, that responds to the nature of the site and intricate topography. Solve design problems related to building structure, building materials and technologies as influenced by the building type, function, urban context and environmental protection.

ARCH 331 Building Construction 3 (3:2:3)

Pre-requisite(s): ARCH 232

This course explores advanced building technologies and complex building structural configurations for long span buildings such as structural frames, space structure, suspended roof structure and air-supported structures. Offsite constructions, prefabricated and modular housing, envelopes to above listed types of building structures in relation to impact on environment are discussed.

ARCH 336 Construction Drawings (3:2:3)

Pre-requisite(s): ARCH 232, ARCH 331

This course will lead the students to explore the principles of BIM used to visualize, document and communicate professional architectural working drawings respecting national, regional and international building codes and regulations.

ARCH 341 History and Theory of Architecture 3 (3:3:0)

Pre-requisite(s): ARCH 242

The study of the development of Islamic art and architecture and its characteristics since the dawn of Islam and the impact of social, cultural, environmental and functional factors on architecture in the Moslem world. Analysis of selected examples of historical monuments from Islamic countries and interpretations of contemporary Islamic Architecture.

ARCH 342 History and Theory of Contemporary Architecture (3:3:0)

Pre-requisite(s): ARCH 341

The formation of modern theories and trends in contemporary art and architecture since the industrial revolution until Today. Analysis of works by the pioneers of modern movements in architecture. Regional and vernacular architecture with special regards to environmental, social and technological issues. Selected examples of characteristic contemporary architecture in the UAE.

ARCH 372 Sustainable Architecture (3:3:0)

Pre-requisite(s): ENVS 102

The course addresses the relationship of the built environment to natural environment through a whole system approach, with a focus on sustainable design of buildings. The emphasis is on local green design approaches, energy efficiency, renewable energy, and the appropriate use and conservation of resources, including materials, water, and land.

ARCH 421 Architectural Design Studio 5 (4:0:12)

Pre-requisite(s): ARCH 322

Introduce students to the integrated design process with multiple stakeholders and multidisciplinary approaches (structural, mechanical, environmental) through buildings with shared functions. Via independent study and creative solutions students explore approaches and processes of integrated design process and produce environmentally comprehensive and human-centered design solutions.

ARCH 422 Architectural Design Studio 6 (4:0:12)

Pre-requisite(s): ARCH 421

Design of a complex site and buildings through an integrated process taking in consideration the boundaries and exploring their mutual reciprocities. Emphasis on professional design thinking approaches that reflect student's personal values and ethical attitude that address issues of sustainability and technology in response to the project's functional requirements and regional context.

ARCH 449 Technology of the Built Environment (3:3:0)

Pre-requisite(s): ARCH 336

This is an advanced level course that will allow students to discover the fundamentals of Parametric modeling for design applications in Architecture. Students will investigate rule-based and parametric design concepts and techniques in the context of a generative modeling environment: Dynamo for Revit.

ARCH 454 Urban Planning (3:1:6)

Pre-requisite(s): ARCH 322

Introduction to the environmental, social and economic aspects necessary in the formation of an urban planning process; the characteristics of the urban fabric and the development of cities

and their urban elements into integrated, harmonious and functional unity; social services and infrastructure and their necessary provision according to norms and standards.

ARCH 456 Sustainable Housing (3:3:0)

Pre-requisite(s): ARCH 372

The course begins with a section on society and housing, exploring how sustainable housing practices build community. The second part of this course focuses on the relationship between society and the environment. We explore questions about how community growth has influenced the environment and how natural events affects our communities.

ARCH 457 Urban Design (3:1:6)

Pre-requisite(s): ARCH 463

This course focuses on the definition, development and designing urban space concepts that both challenges and demonstrates students' knowledge and skills in urban design. Through advanced investigation of the history, theory and practice of urban design approaches, students learn the principles of place making, connections between people and places within the spatial layers of a city.

ARCH 459 Conservation of Historic Environment (3:3:0)

Pre-requisite(s): ARCH 341

This course aims to provide students with knowledge about development of historic conservation theory and practice. Students will learn about the principal schools of thoughts, defining practices and new approaches to definition and assessment of cultural heritage. Students will explore a range of subjects and issues that affect contemporary heritage conservation practice, including its historical and philosophical underpinnings and its relation to sustainable environment.

ARCH 463 Landscape Architecture (3:1:6)

Pre-requisite(s): ARCH 322

The natural environmental equilibrium affecting different site scales. History of gardens, evolution through civilizations of the Mediterranean region & plant species in UAE. Landscape as gardens, open spaces & gathering areas. Introduction to environment-friendly concepts, energy conservation implementation on building sites. The influence of local climates to landscape designs.

ARCH 473 Environmental Control (3:3:0)

Pre-requisite(s): None

The course focuses on sustainable-green architecture design supported by the computer simulation of building energy use, natural ventilation, and daylighting. The simulation process utilizes research and simulation software to produce design evidence of the sustainability criteria. This course also may prepares undergraduate students for their further graduate studies in sustainability.

ARCH 485 Professional Practice (3:3:0)

Pre-requisite(s): ARCH 422

An overview of the architectural practice complexities in historic and contemporary context; the roles and responsibilities of the architect with emphasis on the characteristics of best practices; the architects in the office from starting a practice, marketing and strategic planning of practice, methods of project delivery to design contracts and agreements and AIA documents as well as ethics and existence in the society.

ARCH 487 Project Management (3:3:0)

Pre-requisite(s): ARCH 336

The course covers key components of project management, including project integration, project scope management, project time and cost management, construction project, contract documents and types of specification depending on project nature, quantity surveying and quality management, human resource considerations, communications, risk management, and procurement management.

ARCH 521 Architectural Design Studio 7 (4:0:12)

Pre-requisite(s): ARCH 422

Contextual design of a group of buildings through complex design approaches and integrated urban design framework that might urban infill, upgrading existing built environment, or heritage buildings conservation via reuse, etc. Focus of demographics of the site, socio-economic, environmental conditions for users' wellness and life quality improvement.

ARCH 591 Graduation Project Thesis Research (2:1:3)

Pre-requisite(s): ARCH 422

The course is oriented towards systematic analysis of the graduation project on selected topic, its functional and spatial relationships, location and setting, physical and human environments, use of case studies, and provision of synthesis and alternative concepts as design solutions. The outcome is presented in both forms, written as a report and visual as posters, to a jury of professionals.

ARCH 592 Graduation Project Design (6:0:18)

Pre-requisite(s): ARCH 521 and ARCH 591

Under the supervision of a faculty advisor(s), students independently develop design solutions on investigated architectural topic of personal interest selected for ARCH 591. Through final project jury presentation and portfolio, students demonstrate their ability to professionally develop design solutions and solve problems related to spatial, functional, aesthetic, social, environmental, technical and other aspects of the built environment.

CIEN 213 Engineering Mechanics (3:3:0)

Pre-requisite(s): MATH 113; PHYS 110

Vectors, force systems, equilibrium of particles and rigid bodies, structures (trusses and frames), internal forces (shearing force and bending moment diagrams), centroids, moment of inertia, stresses, strains, bars with axial loads, shafts in torsion and beams in bending.

CIEN 214 Structural Analysis for Architects (3:3:0)

Pre-requisite(s): CIEN 213

Classification of Structures, Loads on Structures, Load Tracing, Static Determinacy, Indeterminacy, and Instability, Shear Force and Bending Moment in Beams and Frames, Deflection of Beams (Conjugate-Beam Method), Introduction to Statically Indeterminate Structures, Slope Deflection and Stiffness Methods of Analysis.

CIEN 261 Surveying (1:0:3)

Pre-requisite(s): CIEN 201

Principles of surveying by conducting tests on distance measurements, levels and theodolites, directions and angular measurements, topographic surveys, areas and volumes; traverse surveys; setting out horizontal and vertical curves, training on Total Station.

CIEN 322 Structural Design (3:3:0)

Pre-requisite(s): CIEN 214

Properties of concrete and steel, cracked and uncracked section analysis, design for bending and shear, singly, doubly reinforced sections, rectangular sections, and T-sections, design of continuous beams, one-way solid and one-way ribbed slabs, design of steel tension members, design of steel concentric compression elements and design of steel beams.

MENG 468 Building Utilities I: HVAC and Mechanical Building Services (3:0:3)

Pre-requisite(s): PHYS 110, ARCH 336

This course explores building systems such as heating, ventilating and air-conditioning, water supply, drainage, fire safety, vertical transportation, building control systems, and assist integrating them into architectural design of building. Evaluates systems types, components, and installation and maintenance procedures as it relates to building regulations, systems impact on indoor comfort and environment.

MENG 422 Building Utilities II: Illumination, Acoustics, and Electrical Building Services (3:3:0)

Pre-requisite(s): PHYS 110, MENG 468

This course explores building electrical system and controls, lighting and acoustic design and assist integrating them into architectural design of the building. Evaluates systems types, components, and installation and maintenance procedures as it relates to building regulations and systems impact human's indoor comfort and on environment.