FACULTY OF ARCHITECTURAL ENGINEERING

HISTORY

The Faculty of Architectural Engineering was founded in 1962 as the fourth faculty at BAU. Since commencement, it has played a key role in addressing and serving the needs of students from Lebanon and the entire Middle East. The faculty started with 36 students in 1962 prospering to a total of 375 students in 2007, at various levels of the curriculum.

The faculty was initially located at the main building in Beirut campus. However, in 1987 and in order to accommodate the increasing number of students and facilities, it moved to the now labeled "Hariri Building" and occupied the top four floors. It remained there until October 2006 when it became the first BAU faculty to reside in the newly established Debbieh campus in the Shouf District inline with the university's expansion plans.

The faculty constantly updates its programs and their structure ranging from the extended academic year system to the two academic terms scheme in 1993. More recently, in 2005, the faculty implemented the Credit Hour system thereby offering students a more adaptable and responsive program spreading over a ten-semester period (minimum).

The postgraduate programs were launched in 1972, and the first Master Degree in Architecture and Urban Design was awarded in 1974. The postgraduate programs were temporarily stopped due to the Civil War and restarted with the Diploma program in 1996. Registration for the PhD and Master programs commenced in 2000 and the first of both was awarded in 2005.

MISSION

Consistent with the master plan of BAU, the Faculty of Architectural Engineering is committed to delivering a professional architectural education necessary for those who seek to enter the architectural practice. The Faculty's academic mission is to advance the discipline and practice of architecture through a seamless program of undergraduate and postgraduate studies that pursue the following:

- maintaining the strength of the faculty through focusing on the core areas of the profession: Architectural and Urban Design, Execution Design, Urban and Regional Planning, Environmental Analysis, as well as Construction Engineering, while integrating and evolving theories, practices, and technologies into the curriculum;
- providing an educational atmosphere that respects individualism and diversity, while fostering the development of articulated, creative and rational design problem-solving process;
- educating architects and planners to practice in a manner that is responsive and responsible to society, culture and the environment;
- advancing architectural knowledge through research and critical thinking; and
- using all attained knowledge to benefit local, regional and global communities.

VISION

The vision of the Faculty of Architectural Engineering is to foster a challenging learning environment and to continually compete as well as lead advances in architectural education, in order to prepare innovative, critical and industrious graduates able to improve, through their future careers, the quality of the built environment.

UNDERGRADUATE PROGRAM

OFFERED DEGREES

The faculty offers a Bachelor of Architectural Engineering Degree where the standard duration of study is 10 semesters.

PROGRAM DESCRIPTION

The degree requirements consist of a total of 180 credit hours taken as follows:

- Mandatory Courses: 132 Cr. consisting of the fundamental structure of the program, which include Design Studios, Execution Design, the essential theoretical and technical requirements, as well as courses in Civil Engineering.
- Faculty Elective Courses: 32 Cr. divided into:
  *Preliminary Level (200's courses): 8 Cr.
  *Intermediate Level (300's courses): 10 Cr.
  *Advanced Level (400's courses): 14 Cr.
- General University Requirements: 16 Cr. divided into:
  *University Mandatory Courses: 5 Cr.
  *University Elective Courses: 11 Cr.

BACHELOR OF ARCHITECTURAL ENGINEERING
(180 Credit Hours)

First Semester			Cr
ARCH	131*	Architectural Design Fundamentals: Visual Studies	6
ARCH	133*	Building Construction I	2
ARCH	135	History of Architecture I	2
ARCH	137	CAD Drawing	2
ARCH	139	Architectural Sketching	2
		Elective (General)[1]	2
		Elective[2]	2
		Total	**18**

Second Semester			Cr
ARCH	132*	Architectural Design Fundamentals: Physical Studies	5
ARCH	134*	Building Construction II	3
ARCH	136	Theory of Architecture I	2
ARCH	138	Computer Graphics	2
ARCH	140	Academic Writing	2
		Elective (General)[1]	2
		Elective[2]	2
		Total	**18**

Third Semester			Cr
ARCH	231*	Architectural Design I	5
ARCH	233*	Building Construction III	3
ARCH	235	History of Architecture II	2
ARCH	237	Theory of Colors	2
CVEE	231	Theory of Structures for Architects	2
		Elective (General)[1]	2
		Elective[2]	2
		Total	**18**

Fourth Semester			Cr
ARCH	232*	Architectural Design II	5
ARCH	234*	Building Construction IV	3
ARCH	236	Theory of Architecture II	2
ARCH	238	Indoor Environmental Controls	2
CVEE	232	Concrete and Steel Structures	2
		Elective (General)[1]	2
		Elective[2]	2
		Total	**18**

Fifth Semester			**Cr**
ARCH	331*	Architectural Design III	5
ARCH	333*	Execution Design I	3
ARCH	335	History of Architecture III	2
ARCH	337	Interior Design	2
CVEE	331	Soil Mechanics & Foundations, and Material Properties & Testing	2
		Elective (General)[1]	2
		Elective[3]	2
		Total	**18**

Sixth Semester			**Cr**
ARCH	332*	Architectural Design IV	5
ARCH	334*	Execution Design II	3
ARCH	336	Theory of Architecture III	2
ARCH	338	City and Town Planning	2
CVEE	332	Surveying for Architects	2
		Elective (General)[1]	2
		Elective[3]	2
		Total	**18**

Seventh Semester			**Cr**
ARCH	431*	Architectural Design V	5
ARCH	433*	Execution Design III	3
ARCH	435	Urban Design	2
MECH	431	HVAC and Sanitation For Architects	2
		Elective (General)[1]	2
		Elective[3]	2
		Elective[3]	2
		Total	**18**

Eighth Semester			**Cr**
ARCH	432*	Architectural Design VI	5
ARCH	434*	Execution Design IV	3
ARCH	436	Research and Programming	2
ARCH	438	Specifications and Quantities	2
		Elective (General)[1]	2
		Elective[3]	2
		Elective[4]	2
		Total	**18**

Ninth Semester			**Cr**
ARCH	531	Graduation Project I	8
ARCH	533	Architectural Criticism	2
ARCH	535	Building Regulations And Professional Practice	2

		Elective[4]	6
		Total	**18**

Tenth Semester			**Cr**
ARCH	532	Graduation Project II	10
ARCH	534	Graduation Thesis	2
		Elective[4]	6
		Total	**18**

[1] A total of 16 credits is required as General University Requirements; 5 credits are selected from the University Mandatory Courses list including ARAB 001 (2Cr.), ENGL 001 (2Cr.), BLAW 001 (1Cr.) and another 11 credits are selected from the University Elective Courses list.
[2] Selected from the list of Faculty Elective Courses offered at the "Preliminary Level".
[3] Selected from the list of Faculty Elective Courses offered at the "Intermediate Level".
[4] Selected from the list of Faculty Elective Courses offered at the "Advanced Level".

***** These core modules are separated and independently graded courses. Students failing the first module (Fall Sem.) are still allowed to register in the second one (Spring Sem.) However, the failed module(s) must be repeated.

STAGE ONE

First Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH131	Architectural Design Fundamentals: Visual Studies *	-	6	2	8	-	6	70	30	-	100
ARCH133	Building Construction I *	-	2	2	-	-	2	70	30	-	100
ARCH135	History of Architecture I	-	2	2	-	-	2	60	40	-	100
ARCH137	CAD Drawing	-	2	1	-	2	2	70	30	-	100
ARCH139	Architectural Sketching	-	2	-	4	-	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

Second Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH132	Architectural Design Fundamentals: Physical Studies *	-	5	-	10	-	6	70	30	-	100
ARCH134	Building Construction II *	-	3	1	4	-	4	70	30	-	100
ARCH136	Theory of Architecture I	-	2	2	-	-	2	60	40	-	100
ARCH138	Computer Graphics	ARCH137	2	1	-	2	2	70	30	-	100
ARCH140	Academic Writing	-	2	2	-	-	2	60	40	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

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COURSES DESCRIPTION

STAGE ONE

First Semester

ARCH131. ARCHITECTURAL DESIGN FUNDAMENTALS: VISUAL STUDIES (6 CR.: 2LEC, 8STU)
Introductory course including fundamentals of architectural drafting techniques, such as lettering, line work, orthographic projections, two dimensional representation, plans, sections, elevations, shades and shadows, architectural and topographic forms. Studies of artistic expression and inventive composition. Principles and rules of visual composition. Vocabulary of visual composition, relationships and aesthetics. Experimentation, diverse tools and materials used to visually interpret artwork and design concepts. Practical considerations and applications.

ARCH133. BUILDING CONSTRUCTION I (2 CR.: 2LEC, 0STU)
Introduction to the elements and components of construction, and the basic building materials and their properties. General applications and characteristics of materials. Classification of building types and categories. Structural systems and foundation types. General fundamentals and principles of architectural construction. Overview of materials techniques and procedures.

ARCH135. HISTORY OF ARCHITECTURE I (2 CR.: 2LEC)
Core module of history of art and architecture in various civilizations, including Pre-historic, Ancient Egyptian, Mesopotamian (Assyrian and Babylonian), and Greek. Different approaches to the presentation of history: visual images, cultural material, and text-based communication.

ARCH137. CAD DRAWING (2 CR.: 1LEC, 2LAB)
Basic computer aided drafting skills using the latest release of CAD software including: file management, Cartesian coordinate system, drawing set-ups, drawing aids, layer usage, drawing 2D geometric shapes, editing objects, array, text applications, dimensions and dimension variables, paper space and viewports, templates, external references, and printing/plotting. 3D AutoCAD features and commands including: wireframe construction, surface modeling, solid modeling, extrusions, Boolean operations, 3D editing, and 3D views.

ARCH139. ARCHITECTURAL SKETCHING (2 CR.: 0LEC, 4STU)
Developing graphic language by which an architect explains buildings and other objects using a range of fundamental drawing skills and media. Exercises in freehand representational drawing using charcoal, graphite, and conte crayon with emphasis on line, proportion, values, and composition. Portfolio of drawings based on observation of the physical world, in particular the built world. Studies progress from geometric to non-geometric forms.

Second Semester

ARCH132. ARCHITECTURAL DESIGN FUNDAMENTALS: PHYSICAL STUDIES (5 CR.: 0LEC, 10STU)
Series of Exercises leading to the development of manual drawing and delineation skills. Study of human activity, dimensions of human figure and ergonometric as means of designing usable space. The representation of building elements in plans elevation and section. Projection techniques for shade shadow construction. 3 Dimensional drawings of building interior and exterior; oblique isometric, axonometric, and perspectives. Applications leading to the understanding of model types, materials and techniques of preparation. Managing different types of models and levels of detailing.

ARCH134. BUILDING CONSTRUCTION II (3 CR.: 1LEC, 4STU)
Further developing knowledge about the fundamentals and preliminary principles in the field of building construction and preparation of basic working drawings. Series of exercises addressing typical building elements, multiple components, and construction processes. Explanation of building practices and sequential steps. Structural elements, techniques and materials, all applicable in small-scale buildings.

ARCH136. THEORY OF ARCHITECTURE I (2 CR.: 2LEC)
Introduction to basic design theories and strategies related to the development of spatial concepts in architectural design, including composition, color, form, relationship of elements, and development of 2-D and 3-D design projects. More emphasis on concept generation and evaluation.

ARCH138. COMPUTER GRAPHICS (2 CR.: 1LEC, 2LAB)
PhotoShop application for architectural rendering and the creation, modification and manipulation of images. SketchUp modeling for the conceptual phases of design. 3D rendering and animation using AUTODESK 3D Studio software. Emphasis on 3D geometry, texture mapping, lighting, camera placement, shading, photo-realistic rendering, animation techniques, and walk through animations.
Prerequisite: *ARCH137*

ARCH140. ACADEMIC WRITING (2 CR.: 2LEC)

Methods and tools needed to prepare academic and professional documents are reviewed. Basic knowledge about various steps, stages, and process of production of complete research papers and technical reports, the principles of writing, standards, requisites, considerations, phases, and subject-related requirements. The final assessment in this course is to be carried out internally (e.g. oral discussion and/or within exam).

STAGE TWO

Third Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH231	Architectural Design I *	ARCH131 ARCH132	5	-	10	-	-	70	-	30	100
ARCH233	Building Construction III *	ARCH133 ARCH134	3	1	-	4	-	70	-	30	100
ARCH235	History of Architecture II	ARCH135	2	2	-	-	2	60	40	-	100
ARCH237	Theory of Colors	-	2	1	2	-	2	70	30	-	100
CVEE231	Theory of Structures for Architects	-	2	1	-	2	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

Fourth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH232	Architectural Design II *	ARCH131 ARCH132	5	-	10	-	-	70	-	30	100
ARCH234	Building Construction IV *	ARCH133 ARCH134	3	1	4	-	-	70	-	30	100
ARCH236	Theory of Architecture II	ARCH136	2	2	-	-	2	60	40	-	100
ARCH238	Indoor Environmental Controls	-	2	2	-	-	2	60	40	-	100
CVEE232	Concrete and Steel Structures	CVEE231	2	1	-	2	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

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COURSES DESCRIPTION

STAGE TWO

Third Semester

ARCH231. ARCHITECTURAL DESIGN I (5 CR.: 0LEC, 10STU)
Architectural design work preceded by analysis, research and experimentation. Topics requiring theoretically informed and practically viable architectural design solutions. Response to increasing complexity of ethical, social, conceptual and formal conditions, such as sustainability, identity, cultural imperatives, and modes of realizing architectural designs. Designs in response to specific aims including modular design, architectural space grouping, articulation of space and functional relationships.
Prerequisite: *ARCH131 – ARCH132*

ARCH233. BUILDING CONSTRUCTION III (3 CR.: 1LEC, 4STU)
Investigation and development of building construction techniques. Review of typical components of the building. Floors, walls, ceilings, roofs and vertical circulation systems. Types and details of such elements as openings and staircases. Exercise based class simulating the understanding of construction including analysis and applications of standards, relationships, and material review and selection.
Prerequisite: *ARCH133 – ARCH134*

ARCH235. HISTORY OF ARCHITECTURE II (2 CR.: 2LEC)
Study and review of Roman architecture, Early Christian architecture, Byzantine architecture, Medieval architecture, Romanesque and Gothic architecture, and Renaissance architecture in Europe through 15th and 16th Centuries.
Prerequisite: *ARCH135*

ARCH237. THEORY OF COLORS (2 CR.: 1LEC, 2STU)
Color theories including a variety of concepts, as well as many practical uses of color within architecture. Color Aspects: psychology of visual perception, human response to visual imagery and communication using color. Designer's Methods to develop and best utilize color within environments. Informed application of practical color theory principles to student projects selecting colors wisely and deliberately.

CVEE231. THEORY OF STRUCTURES FOR ARCHITECTS (2 CR.: 1LEC, 2TUT)
Theory and concepts of structures to emphasize an intuitive comprehension of the fundamental principles of structural behavior including loading, shear and bending moments. Calculation of internal forces in simple structures such as cantilevers, simple beams, and overhanging beams. Calculation of internal forces in truss members.

Fourth Semester

ARCH232. ARCHITECTURAL DESIGN II (5 CR.: 0LEC, 10STU)
Series of exercises leading to the development of design projects based on the disciplinary or inter-disciplinary theme of the design studio. Detailed knowledge of a specialist or inter-disciplinary aspect of design, its presentation and demonstration, both graphically and orally. Portfolio of designs in response to specific aims: Comprising the study of outer and inner spaces relationship, building and site relationship, environmental aspects and site planning.
Prerequisite: *ARCH131 – ARCH132*

ARCH234. BUILDING CONSTRUCTION IV (3 CR.: 1LEC, 4STU)
Special treatments within buildings in relation to damp, heat, light and noise. Materials and techniques for internal and external finishes including internal partitions, curtain wall systems, indoor features e.g. fireplaces. Outdoor detailing and street furniture. Timber Construction and wooden structures. Analysis and applications of standards, material review and selection, construction detailing and documentation.
Prerequisite: *ARCH133 – ARCH134*

ARCH236. THEORY OF ARCHITECTURE II (2 CR.: 2LEC)
This course explores the form, space and scale: form defining space, qualities of architectural space, articulation and organization of form and space, circulation elements and building approaches. It investigates the intentions in architecture: design process, architectural concept and unity. It also reviews the principles of aesthetics: vocabulary of architectural compositions, visual and aesthetic relationships. The course includes analysis of design principles and their applications in various architectural examples.
Prerequisite: *ARCH136*

ARCH238. INDOOR ENVIRONMENTAL CONTROLS (2 CR.: 2LEC)
Principles of lighting (daylight and artificial) in buildings, Reducing noise and enhancing sound for communication. Regulating heat transfer for occupant thermal comfort. Description of passive means for environmental control, including presentation of scientific explanations and design guidelines for utilizing these means. Design guidelines for use in the preliminary schematic design phase.

CVEE232. CONCRETE AND STEEL STRUCTURES (2 CR.: 1LEC, 2TUT)
Combined Course addressing two technical fields:
Review of concrete and steel structure systems. Reinforced concrete fundamentals reviewing basics of reinforced concrete behavior and introducing methods of design used in current engineering practice. Basic mechanics of structural concrete introduced in examining bending, shear, and axial forces. Topic areas including beams, slabs systems, columns, foundations, retaining walls, and an introduction to pre-stressed concrete.
Based on a statics and strength of materials, Review of tension, compression and bending steel members designed into truss or column and beam structural systems.
Prerequisite: *CVEE231*

STAGE THREE

Fifth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH331	Architectural Design III *	ARCH231 ARCH232	5	-	10	-	-	70	-	30	100
ARCH333	Execution Design I *	ARCH233 ARCH234	3	1	4	-	-	70	-	30	100
ARCH335	History of Architecture III	ARCH135 ARCH235	2	2	-	-	2	60	40	-	100
ARCH337	Interior Design	ARCH237	2	1	2	-	2	70	30	-	100
CVEE331	Soil Mechanics & Foundations, and Material Properties &Testing	CVEE231	2	1	-	2	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

Sixth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH332	Architectural Design IV *	ARCH231 ARCH232	5	-	10	-	-	70	-	30	100
ARCH334	Execution Design II *	ARCH233 ARCH234	3	1	4	-	-	70	-	30	100
ARCH336	Theory of Architecture III	ARCH136 ARCH236	2	2	-	-	2	60	40	-	100
ARCH338	City and Town Planning	-	2	1	2	-	2	70	30	-	100
CVEE332	Surveying for Architects	-	2	1	2	-	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

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COURSES DESCRIPTION

STAGE THREE

Fifth Semester

ARCH331. ARCHITECTURAL DESIGN III (5 CR.: 0LEC, 10STU)
Series of exercises leading to the development of design projects based on the disciplinary or inter-disciplinary theme of the design studio. Detailed knowledge of a specialist aspect of design, its presentation and demonstration, both graphically and orally. Portfolio of designs in response to specific aims comprising the process of site analysis, space organization (interior and exterior), structural systems, forms, spaces and universal space concept.
Prerequisite: *ARCH231 – ARCH232*.

ARCH 333. EXECUTION DESIGN I (3CR.: 1LEC, 4STU)
Principles of preparing a complete portfolio of working drawings. Application on a building or project initially designed by the student. Principles of producing integrated and detailed working drawings. Analysis and applications of standards, material review and selection, execution detailing and documentation.
Prerequisite: *ARCH233 - ARCH234*.

ARCH 335. HISTORY OF ARCHITECTURE III (2CR.: 2LEC)
Overview of Islamic architecture. Roots and early beginnings. Trends and development of Islamic architecture: features and values. Umayyad and Abbasid architecture. Early and classic architecture in North Africa and the Middle East. Evolution of Islamic architecture: Fattimid, Ayyubid, Bahari Mamluk, Circassian Mamluk, and Ottoman architecture.
Prerequisite: *ARCH135 – ARCH235*

ARCH 337. INTERIOR DESIGN (2CR.: 1LEC, 2STU)
Interior design theories covering diverse issues and topics as relevant to indoor environments, components of interior design, considerations, characteristics, and relationship with architectural design, methods and processes, contemporary trends and approaches to interior design, values, interpretation and formulation of concepts.
Prerequisite: *ARCH237*

CVEE331. SOIL MECHANICS & FOUNDATIONS, AND MATERIAL PROPERTIES & TESTING (2 CR.: 1LEC, 2TUT)
Combined Course addressing two technical fields:
Introduction to soil mechanics: Soil formation and soil structure; Soil composition; Grain size analysis; Plasticity of soils; Effective stress concept; shear strength, stress distribution; Bearing capacity of shallow foundation; Theory of consolidation; Settlement; Soil exploration. Foundations: shallow, deep foundations, and pile caps.
Introduction to Testing and properties of materials: strength characteristics of building materials and material assemblies; stress and strain; rigidity and deformation; temperature effects; torsion effects; combined loading of elements and systems.
Prerequisite: *CVEE231*

Sixth Semester

ARCH 332. ARCHITECTURAL DESIGN IV (5CR.: 0LEC, 10STU)
Series of exercises leading to the development of design projects based on the disciplinary or inter-disciplinary theme of the design studio. Detailed knowledge of a specialist aspect of design, its presentation and demonstration, both graphically and orally. Portfolio of designs in response to specific aims: advanced study of building context, development and creation of architectural character and identity in the design of spaces and buildings.
Prerequisite: *ARCH231 – ARCH232*.

ARCH 334. EXECUTION DESIGN II (3CR.: 1LEC, 4STU)
Preparations of an integrated portfolio of working drawings related to a design project by the student within the same study level. Complete and detailed execution drawings, interpreting the components relationships and information relevant to the construction materials, methods and processes.
Prerequisite: *ARCH233 - ARCH234*.

ARCH 336. THEORY OF ARCHITECTURE III (2CR.: 2LEC)
The formative aspects of architecture from the early 20th century to present day. Emphasis on new trends and associated activities in the field of architecture. Detailed studies of various periods within broad spectrum. Issues of spatial organization, construction, architectural theory, and architectural grammar. Physical, social and economic context of building. Role of the architect in society.
Prerequisite: *ARCH136 – ARCH236*

ARCH 338. CITY AND TOWN PLANNING (2CR.: 1LEC, 2STU)
Town Planning theories, practices and ideas. Definitions, objectives and levels of Planning. Origins and evolution of historical and contemporary ideas underlining planning practice in its various forms. Relevant topics: land use, housing, human settlements and urban environments. Current challenges and concerns of urban development or planning, aspects of the planning profession.

CVEE332. SURVEYING FOR ARCHITECTS (2 CR.: 1LEC, 2LAB)
Technology Discussion of the major topics in surveying engineering technology including field instrumentation, boundary surveying, topographic surveying. Measurement of distances, directions and angles, using the tape, level, compass, transit and theodolit. Computation of areas and traverses, lines and grades. Also, an introduction to construction surveys, and an introduction to GPS measurement.

STAGE FOUR

Seventh Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH431	Architectural Design V *	ARCH331 ARCH332	5	-	10	-	-	70	-	30	100
ARCH433	Execution Design III *	ARCH333 ARCH334	3	1	4	-	-	70	-	30	100
ARCH435	Urban Design	ARCH338	2	1	2	-	2	70	30	-	100
MECH431	HVAC and Sanitation For Architects	-	2	2	-	-	2	60	40	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 3	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

Eighth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH432	Architectural Design VI *	ARCH331 ARCH332	5	-	10	-	-	70	-	30	100
ARCH434	Execution Design IV *	ARCH333 ARCH334	3	1	4	-	-	70	-	30	100
ARCH436	Research and Programming	ARCH140 ARCH331 ARCH332 ARCH333 ARCH334	2	1	2	-	-	70	-	30	100
ARCH438	Specifications and Quantities	-	2	1	2	-	2	70	30	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 3	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

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COURSES DESCRIPTION

STAGE FOUR

Seventh Semester

ARCH431. ARCHITECTURAL DESIGN V (5 CR.: 0LEC, 10STU)
Series of exercises leading to the development of design projects based on the disciplinary or inter-disciplinary theme of the design studio. Detailed knowledge of a specialist aspect of design, its presentation and demonstration both graphically and orally. Projects, researches and sketch designs aiming to study: Patterns of space, form, functional relationships, and circulation. Applied projects of architectural design for public buildings such as hospitals, hotels, theatres, office buildings, and sports centers.
Prerequisite: *ARCH331 – ARCH332*.

ARCH 433. EXECUTION DESIGN III (3CR.: 1LEC, 4STU)
Development and preparation of complete sets of working drawings for a complex building initially designed by the student, study of various architectural details, both internal and external. Advanced study, analysis and interpretation of composite processes, techniques and treatments.
Prerequisite: *ARCH333 – ARCH334*.

ARCH 435. URBAN DESIGN (2CR.: 1LEC, 2STU)
Contemporary theories of urban design. Urban environments: Keywords and definitions. Modes of critique related to the design of urban public realm. Urban environments: Scope, complexities, and responses to economic, cultural, political, social, aesthetic and natural forces. Urban design issues, methodologies and current practices. Analytical and design skills. Generating and testing alternative approaches of urban design, development of specific sites and role of urban design within particular spatial, social, economic and political contexts. Case studies and assignments in urban design methodologies, synthesis of theoretical knowledge, and communication of urban design ideas.
Prerequisite: *ARCH338*

MECH431. HVAC AND SANITATION FOR ARCHITECTS (2 CR.: 2LEC)
Course addressing two technical fields:
HVAC: Introduction to air conditioning and mechanical installations in buildings and indoor spaces. Various heating and cooling systems. Ventilation and air conditioning of various building types. Installations and control of systems.
Sanitation: Sanitary engineering issues. Building site selection. Dampness: sources and methods of insulation. Water supply treatment and distribution. Sanitary fixtures, installation and connections. Treatment of soiled water. Rainwater drainage and storm sewers. Biological purification of sewerage. Solid waste and refuse disposal.

Eighth Semester

ARCH 432. ARCHITECTURAL DESIGN VI (5CR.: 0LEC, 10STU)
Series of exercises leading to the development of design projects based on the disciplinary or inter-disciplinary theme of the design studio. Detailed knowledge of a specialist aspect of design, its presentation and demonstration both graphically and orally. Projects, researches and sketch designs aiming to study: Physical, social and economic aspects of urban design, local context, land uses, housing, circulation, densities, and structural systems. Applied projects of architectural design such as residential and housing complexes and sites, schools, and hospitals.
Prerequisite: *ARCH331 – ARCH332*.

ARCH 434. EXECUTION DESIGN IV (3CR.: 1LEC, 4STU)
Further Development and preparation of an integrated portfolio of technical working drawings for same design project addressed in ARCH433. Detailed study of various architectural components and technical systems (e.g. Sanitary, electrical, mechanical, site infrastructure). Special emphasis on composite drawings illustrating particular execution details, special treatments, materiality, and spatial design related to a design project by the student within the same study level. Complementary written documents for construction work.
Prerequisite: *ARCH333 – ARCH334*

ARCH 436. RESEARCH AND PROGRAMMING (2CR.: 1LEC, 2STU)
Overview of architectural programming and pre-design stages. Insight into different areas of research needed to develop proposals for graduation projects. Basic research methods: literature review, objective setting, data collection and problem-solving. Resources. Interpretation and presentation of information. Documentation styles. Academic and technical writing. Preparation of complete programs for graduation project.
Prerequisite: *ARCH140 - ARCH331 – ARCH332 – ARCH333 – ARCH334*

ARCH 438. SPECIFICATIONS AND QUANTITIES (2CR.: 1LEC, 2STU)
Introduction to quantity surveying. Methods of measurement and calculations. Preparation of comparative tables of prices and bids and their evaluation. Specification writings. General conditions of contract between architect, client and contractor. Specifications for materials and various constructional works and execution procedures. Preparation of contract document for various trades and works for bids.

STAGE FIVE

Ninth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH531	Graduation Project I	ARCH431 ARCH432 ARCH433 ARCH434 ARCH436	8	-	16	-	-	70	-	30	100
ARCH533	Architectural Criticism	ARCH136 ARCH236 ARCH336	2	2	-	-	2	60	40	-	100
ARCH535	Building Regulations and Professional Practice	-	2	2	-	-	2	60	40	-	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 3	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

Tenth Semester

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH532	Graduation Project II	ARCH531	10	-	20	-	-	70	-	30	100
ARCH534	Graduation Thesis	ARCH531	2	-	4	-	-	70	-	30	100
	Elective Course 1	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 2	-	2	-	-	-	2	60/70	40/30	-	100
	Elective Course 3	-	2	-	-	-	2	60/70	40/30	-	100
TOTAL CREDIT HOURS			18								

L: LECTURE
St: STUDIO
Se: SECTION
T: TUTORIAL WORK
W: WRITTEN EXAM
O: ORAL EXAM

COURSES DESCRIPTION

STAGE FIVE

Ninth Semester

ARCH531. GRADUATION PROJECT I (8 CR.: 0LEC, 16STU)
First Module of Extended Course: Comprehensive design project. Exploration of design methods, processes and design concepts. Concepts, designs, and drawings in response to the theme of the graduation project, challenges of the selected typology and location (as they relate to design ideas being introduced). Programmatic statements and development of the project and design proposals. Presentation, criticism and discussion of design phases with panel of referees. Demonstration suitable to interpret advanced concepts and architectural design debate.
Prerequisite: *ARCH431 – ARCH432 – ARCH433 – ARCH434 – ARCH436*.

ARCH533. ARCHITECTURAL CRITICISM (2 CR.: 2LEC)
Lectures and group seminars addressing the evaluation of architectural works, ideologies and approaches. Critical review and assessment of design, interpretation, and responses by different actors. Criteria and methods of analysis and criticism. Appraisal of the delivery process and architectural product.
Prerequisite: *ARCH136 – ARCH236 – ARCH336*

ARCH 535. BUILDING REGULATIONS AND PROFESSIONAL PRACTICE (2CR.: 2LEC)
Introduction to building legislation and codes. Theoretical and analytical investigation of methods available to architects. Legal, ethical and professional obligations. Clients and other parties affected by both the practice and business of architecture. Overview of construction industry. Office practice including accounting and financial reporting, employment, procurement of buildings, tendering, building contract administration. Control of cost, time and quality, quality assurance. Programs and regulatory constraints, building legislations, building law and ordinances, urban planning legislation and housing laws, syndicate regulations, servitude and labor union laws.

Tenth Semester

ARCH532. GRADUATION PROJECT II (10 CR.: 0LEC, 20STU)
Second Module of Extended Course: Continuation of Comprehensive design project. Exploration of design methods, processes and design concepts. Developing of architectural ideas, proposals. Structural systems, detailing, execution design and construction drawings for the graduation project. Progress, in-depth analysis and development of proposals. Presentation, criticism and discussion of project with panel of referees. Detailed representation of complete project to interpret comprehensive understanding of architectural design as a holistic activity.
Prerequisite: *ARCH531*.

ARCH534. GRADUATION THESIS (2CR.: 0LEC, 4STU)
Concise Dissertation: structured written submission integrating text and illustrations (not less than 10,000 words in length) including project-relevant research from primary or secondary sources. Synthesis of knowledge, gathering of information, literature and cross referencing. Programmatic statement for the project and design proposals. Additional critical writing clarifying the challenges of the project as they relate to design ideas being introduced. Final assessment of students work is to be carried out by the same panel of referees of ARCH532.
Prerequisite: *ARCH531*

FACULTY ELECTIVE COURSES

PRELIMINARY LEVEL

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH241	Introduction to Painting	-	2	1	2	-	2	70	30	-	100
ARCH242	History of Arts	-	2	2	-	-	2	60	40	-	100
ARCH243	Architectural Photography	-	2	1	2	-	2	70	30	-	100
ARCH244	Architecture and Environment	-	2	2	-	-	2	60	40	-	100
ARCH245	Social Studies in Architecture	-	2	2	-	-	2	60	40	-	100
ARCH246	Perspective and Rendering	-	2	1	2	-	2	70	30	-	100
ARCH247	Statistics in Architecture	-	2	2	-	-	2	60	40	-	100

COURSES DESCRIPTION

ARCH241. INTRODUCTION TO PAINTING (2CR.: 1LEC, 2STU)
Study of painting language through color, form, materials, and techniques. Aspects of traditional and modern pictorial composition including proportion, space, and color theory through the representation of a variety of subjects.

ARCH242. HISTORY OF ARTS (2CR.: 2LEC)
Tracing the evolution of arts through historical periods. Review of different movements and schools. Contexts, values, and cultural influences. Principal features, designs and characteristics. Analysis and comparative studies.

ARCH243. ARCHITECTURAL PHOTOGRAPHY (2CR.: 1LEC, 2STU)
Basic elements and processes of architectural photography to include camera controls, exposure technique, photo processing, and fundamental principles of photographing architecture. In-depth photo essays relating to architecture, the urban movement, or landscape design following the introduced principles.

ARCH244. ARCHITECTURE AND ENVIRONMENT (2CR.: 2LEC)
Basic theories and interpretations of environmental studies in relation to the built environment. Review of environmental concerns and their scope. Environmental problems, pollution, threats and impacts of human actions. Design of the built environment engaged with the natural environment. Influence of natural elements on the making of architecture. Relationship of architecture to site and landscape.

ARCH245. SOCIAL STUDIES IN ARCHITECTURE (2CR.: 2LEC)
Introduction to the field of sociology, definitions and scope of social studies. Social and cultural characteristics in different societies. Understanding of issues and factors that motivate and influence architectural design and theory, and how architecture is shaped by and shapes cultural concerns and social organization.

ARCH246. PERSPECTIVE AND RENDERING (2CR.: 1LEC, 2STU)
Theoretical principles of perspective: one vanishing point, two vanishing points, three vanishing points, interior perspective. Rendering techniques, architectural delineation, principles of shade and shadow. Exercises on architectural applications, drawing perspective views using conventional and computer methods.

ARCH247. STATISTICS IN ARCHITECTURE (2CR.: 2LEC)
Scope of statistics and applications related to the field of architecture and planning. Basics and principles of statistical studies. Use of data, samples, variables and values. Surveys, analyses and tests of significance. Measurement principles. Descriptive statistics. Support for decision making.

INTERMEDIATE LEVEL

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH341	Architecture Landscape	-	2	2	-	-	2	60	40	-	100
ARCH342	Theory of Housing	-	2	2	-	-	2	60	40	-	100
ARCH343	Environmental Sustainability in Architecture	-	2	2	-	-	2	60	40	-	100
ARCH344	Furniture Styles and Design	-	2	2	-	-	2	60	40	-	100
ARCH345	History of Islamic Arts	-	2	2	-	-	2	60	40	-	100
ARCH346	Theories of Representation	-	2	2	-	-	2	60	40	-	100
ARCH347	Virtual Reality	ARCH138	2	1	-	2	2	70	30	-	100
ARCH348	Graphic Design	ARCH138	2	1	-	2	2	70	30	-	100

COURSES DESCRIPTION

ARCH341. ARCHITECTURE LANDSCAPE (2CR.: 2LEC)
Various theories of architectural landscape, principal landscape design concepts and processes, scope, components and elements, environmental knowledge, contexts and landscape preferences. Design considerations, skills, and scales. Alternative approaches and professional practices. Critique of recent local and international cases of landscape design.

ARCH342. THEORY OF HOUSING (2CR.: 2LEC)
Introduction to contemporary theories and concerns in the field of housing. Roots of housing problem. Housing typologies and classification. Housing sector. Mechanisms and forces shaping the housing market. Factors affecting supply and demand. Economics of housing projects. Feasibility studies. Housing policies and role of government. Residential areas and suburbia. Problems, considerations, and alternative approaches applied in the field.

ARCH343. ENVIRONMENTAL SUSTAINABILITY IN ARCHITECTURE (2CR.: 2LEC)
Fundamental theories about environmental sustainability, definitions, concerns and processes. Introduction to building assessment systems including LEED, Green Globes, GreenPoint Rated, etc. Topics include: high performance green and natural building design; green building assessment; the green building process and ecological design; building water conservation systems; recycling, re-use, waste management and green material selection; indoor environmental quality including air quality, daylighting, views and thermal comfort; and green construction operations.

ARCH344. FURNITURE STYLES AND DESIGN (2CR.: 2LEC)
Introduction to the history of interior design, including furniture periods and styles from antiquity to the present. Design process and evaluation of interior design and furniture styles. Highlight the importance of political, social, economic, and historical factors that influenced interior and furniture styles.

ARCH345. HISTORY OF ISLAMIC ARTS (2CR.: 2LEC)
Overview of the cultural history of Islamic societies as expressed by their art and architecture from the 7th century to the present. Changes in artistic styles, architectural advances and expression of the written word compared across time and geography to understand how Islam influenced and was influenced by society throughout history.

ARCH346. THEORIES OF REPRESENTATION (2CR.: 2LEC)
Seminar focusing on the development of representational techniques in western architecture from antiquity to the present which seeks to discover how these techniques have affected the realization and interpretation of architecture.

ARCH347. VIRTUAL REALITY (2CR.: 1LEC, 2LAB)
The dual realm of design, computer modeling and visualization. Critical appreciation of digital media, interpreting real and imaginary 'worlds' from literature in the form of multimedia digital models. Emphasis on experimentation, imagination and technical competence through digital media.
Prerequisite: *ARCH138*

ARCH348. GRAPHIC DESIGN (2CR.: 1LEC, 2LAB)
Nature and scope of graphic design. Conceptual development. Innovation, technique and presentation. Skills in the areas of representation: logos, packaging, branding and identity, web design and motion graphics. New techniques and methods of artistic expression: issues and directions. Integration of message and content. Innovation, creativity and high standard graphic design.
Prerequisite: *ARCH138*

ADVANCED LEVEL

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH441	Vernacular Architecture	-	2	2	-	-	2	60	40	-	100
ARCH442	Conservation of Historic Buildings	-	2	2	-	-	2	60	40	-	100
ARCH443	Regional Architecture and Urbanism	-	2	2	-	-	2	60	40	-	100
ARCH444	Site Planning	-	2	1	2	-	2	70	30	-	100
ARCH445	Urban Morphology	-	2	2	-	-	2	60	40	-	100
ARCH446	Transportation Planning	-	2	2	-	-	2	60	40	-	100
ARCH447	Project Management	-	2	2	-	-	2	60	40	-	100
ARCH448	Design and Building Economics	-	2	2	-	-	2	60	40	-	100
ARCH449	Intelligent Buildings	-	2	2	-	-	2	60	40	-	100
ARCH450	Environmental Assessment	-	2	2	-	-	2	60	40	-	100
ARCH451	Geographic Information System	-	2	1	-	2	2	70	30	-	100
ARCH452	Building Information Modelling	-	2	1	-	2	2	70	30	-	100

COURSES DESCRIPTION

ARCH441. VERNACULAR ARCHITECTURE (2CR.: 2LEC)
Scope and key definitions. Surveying vernacular architecture. Culture and place influences. Local trends, traditions, and practices. Elements and components. Lessons and values. Connections, continuity and future prospects.

ARCH442. CONSERVATION OF HISTORIC BUILDINGS (2CR.: 2LEC)
Introduction to historic conservation. Cultural considerations. Values and ethics of conservation. Procedures, surveys and documentation. Degrees of intervention. Causes of decay: natural and man-made. Structural behavior in elements of historic buildings. Techniques and practices. Examples and approaches.

ARCH443. REGIONAL ARCHITECTURE AND URBANISM (2CR.: 2LEC)
Exploration of design ideas that address the cultivation of regional character by acknowledging the commonplace, including both the landscape and its buildings. The many disruptive forces that threaten the possibilities of local culture are also considered from a political, social, and economic point of view.

ARCH444. SITE PLANNING (2CR.: 1LEC, 2STU)
Theory, practice and impacts of site planning: zoning, growth management, methods and techniques of land use control. Site identity and character. Systematic surveys and site analysis. Physical, cultural and economic contexts. Critique of recent cases of site planning. Developing land use plans and guidelines, land use ordinances and legal frameworks.

ARCH445. URBAN MORPHOLOGY (2CR.: 2LEC)
Nature of urban morphology. Systematic study of morphology: Elements, components and relationships. Morphology in relation to urban contexts. Variables and parameters. Morphology and local identity. Approaches to deal with particular morphologies within urban contexts.

ARCH446. TRANSPORTATION PLANNING (2CR.: 2LEC)
Theory and practice of transportation in urban areas. Relevant issues, views and approaches. Circulation and transportation planning in relation to land-use. History and practice of transport and land use planning. Major international trends and debates in the field. Applications in relation to different urban contexts.

ARCH447. PROJECT MANAGEMENT (2CR.: 2LEC)
Introduction to management and project management principles. Survey of the techniques and procedures of construction management as it relates to architectural practice. Overview of the organization of the building team, the collaborative design process, cost control, project scheduling, purchasing, accounting, and field supervision. Introduction to the concepts of Value Engineering, partnering, and Total Quality Management.

ARCH448. DESIGN AND BUILDING ECONOMICS (2CR.: 2LEC)
Overview of factors influencing design and building costs, and approaches to managing costs from initial project definition through construction and use. Techniques for project budgeting, cost estimating, and life cycle cost analysis. Feasibility, cost and value, economic analysis, real state market. Cost and benefit ratio analysis, and control of cost and depreciation, cost estimating, including determination of materials, labor, equipment, overhead, profit, and other construction costs.

ARCH449. INTELLIGENT BUILDINGS (2CR.: 2LEC)
Environmental concerns underlying responsive design. Definitions and components of intelligent buildings. Principles of interactive design. Management of indoor environments. The building envelope, automated technologies and smart materials. Integrated building management systems. Efficient use of energy, utilization of renewable energy systems, sustainable management of resources. Analytical techniques and computing tools for studying and assessing building energy and environmental performance.

ARCH450. ENVIRONMENTAL ASSESSMENT (2CR.: 2LEC)
Environmental Impact Assessment for projects (EIA). Strategic Environmental Assessment for policies, plans and programs (SEA). Identifying significant environmental impacts. Environmental management through assessment, prevention, restoration and mitigation of environmental impacts. Preparation of environmental impact statements. Description of decision-making process and tools. Environmental sampling and monitoring programs. Analysis and evaluation of proposed solutions, technical feasibility, examination of case studies.

ARCH451. GEOGRAPHIC INFORMATION SYSTEM (2CR.: 1LEC, 2LAB)
Information management and decision-making support tools used in urban studies. Definition of GIS. Overview of the range of GIS applications (data acquisition, secondary data generation, analysis and management of data, factor combination and GIS-based modeling. Use of GIS in decision-making. Integration of GIS with other technologies used in the field of urban studies.

ARCH452. BUILDING INFORMATION MODELING (2CR.: 1LEC, 2LAB)
Fundamentals of Building Information Modeling (BIM) as a construction documentation system. Introduces concepts and features of BIM. Includes software structure and features, modeling and editing techniques, and sheet creation and organization. Focuses on applying BIM software to develop a set of construction documents. Simulates project development and documentation.

UNIVERSITY REQUIREMENT COURSES

Code	Course Title	Prerequisite	Credits	Teaching Hours			Exam Duration	Grading			Total Grade
				L	St	Se	Hr	T	W	O	
ARCH 001	Photography	-	2	2	-	-	2	70	30	-	100
ARCH 002	Arts History	-	1	1	-	-	1	60	40	-	100
ARCH 003	Introduction to Music	-	2	2	-	-	2	60	40	-	100
ARCH 004	Free Drawing	-	2	1	2	-	2	70	30	-	100

COURSES DESCRIPTION

ARCH 001. PHOTOGRAPHY (2CR.:2LEC)
Background and evolution of photography. Tools, techniques and theories of analogue and digital photography. Applications in architectural studies. Technical information, special effects and skills. Reproduction and communication of images. Treatment and processing. Demonstrations and Assignments.

ARCH 002. ARTS HISTORY (1CR.:1LEC)
Tracing the evolution of arts through historical periods. Review of different movements and schools. Contexts, values, and cultural influences. Principal features, designs and characteristics. Analysis and comparative studies. (Not open for Arch. Major)

ARCH 003. INTRODUCTION TO MUSIC (2CR.:2LEC)
Musical Notes, Italian Terms: Terms connected with tempo (speed, or pace), dynamic markings, indicating volume or intensity, terms describing style, mood and expression. Instruments of the orchestra. Simple musical forms.

ARCH 004. FREE DRAWING (2CR.:1LEC, 2STU)
Techniques of artistic expression and presentation. Different materials and tools such as pencil, charcoal, pastel, and water colors as well as other media, drawing, depiction and rendering of various objects. Indoor and Outdoor contexts. Freehand drawing, illustration and portrayal skills.