



ACADEMIC PROGRAM:

Bachelor of Science in ARCHITECTURE ENGINEERING

Curriculum - Courses Descriptions

2015-2016

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1. Curriculum

First Year

First Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC111	Basic Design Studio I	ARC011	4	2	4	0
ARC141	Engineering Drawings	ARC011	3	1	4	0
ARC142	Freehand Sketching and Model Making	ARC011	2	1	2	0
ARC161	Engineering Math and Physics	MATH095	3	3	0	0
IT102	Introduction to Computer Applications		2	1	0	2
ENGL103	English for Academic Purposes I	ENGL011	3	3	0	0
Total			17	11	10	2

Second Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC112	Basic Design Studio II	ARC111	4	2	4	0
ARC131	Introduction to Building Systems and Codes		3	3	0	0
ARC101	Design Research Methods	ENGL103	2	2	0	0
ARC143	Drafting And Designing With Digital Media	IT102+ARC141	4	2	0	4
ENGL104	English for Academic Purposes II	ENGL103	3	3	0	0
GS102	Creative Thinking		2	1	0	2
Total			18	13	4	6

Second Year

Third Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC211	Architectural Design I	ARC112	5	1	8	0
ARC231	Building Construction	ARC131	4	2	4	0
ARC261	Structural Analysis	ARC161	2	2	0	0
ARC241	Rendering Techniques and Animation I	ARC143	3	1	0	4
ENGL202	English Writing for Communications	ENGL104	3	3	0	0
Total			17	9	12	4

Fourth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC212	Architectural Design II	ARC211	5	1	8	0
ARC232	Working Drawing Documents I	ARC231	4	1	6	0
ARC221	History of Architecture I	ENGL103	3	3	0	0
ARC251	Passive and Active Climatic Design	ARC131	3	3	0	0
GS133	History of Bahrain		3	3	0	0
Total			18	11	14	0

Third Year

Fifth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC311	Architectural Design III	ARC212	5	1	8	0
ARC331	Working Drawing Documents II	ARC232	4	1	6	0
ARC321	History of Architecture II	ARC221	3	3	0	0
ARC361	Building Materials & Testing	ARC261	2	1	0	2
ARC362	Field Surveying	ARC161	3	2	0	2
Total			17	8	14	4

Sixth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC312	Architectural Design IV	ARC311	5	1	8	0
ARC341	Building Information Modelling	ARC241	3	1	0	4
ARC322	Bahraini and Regional Architecture and Art	GS133	2	2	0	0
ARC332	Technical Installations	ARC131	2	2	0	0
ARC363	Structural Design	ARC361	3	3	0	0
ARC323	Theory of Architecture	ARC321	3	3	0	0
Total			18	12	8	4

Fourth Year

Seventh Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC411	Architectural Design V	ARC312	5	1	8	0
ARC451	Environmental Control Systems	ARC251	2	2	0	0
ARC471	Introduction to City & Regional Planning	ARC311	3	2	2	0
ARC49X	Elective I		2	2	0	0
ARC421	International Contemporary Architecture	ARC321	3	3	0	0
GS111	Arabic Language Skills		3	3	0	0
Total			18	13	10	0

Eighth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC412	Urban Design	ARC471	4	2	4	0
ARC452	Lighting and Acoustics	ARC332	2	2	0	0
ARC472	Landscape Architecture	ARC311	3	1	4	0
ARC481	Building Economics	ARC231	3	3	0	0
ARC401	Graduation Project Research	ARC411 + ARC101	3	2	2	0
LAW106	Human Rights		2	2	0	0
Total			17	12	10	0

Summer Semester (Between fourth and fifth year)

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC482	Architectural Training	Passing 125 Hours	6	0	12	0

Fifth Year

Ninth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC511	Architectural Design VI	ARC411	6	1	10	0
ARC59X	ELECTIVE II		2	2	0	0
ARC581	Introduction to Project Management	ARC481	2	2	0	0
ARC582	Specifications and Bill Of Quantities	ARC361	3	3	0	0
ARC551	Sustainable Built Environment	ARC251+ ARC412	2	2	0	0
ARC521	Housing Theories	ARC471	3	2	2	0
Total			18	12	12	0

Tenth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC512	Graduation Project	ARC401	6	1	10	0
ARC583	Professional Practice & Ethics	ARC581	2	2	0	0
ARC584	Building Regulations & Codes	ARC411	2	2	0	0
ARC59X	ELECTIVE III		2	2	0	0
ARC531	Shop Drawings	ARC331	3	1	4	0
Total			15	8	14	0

Elective Courses

Fourth Level Elective Courses

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC491	Interior Design	ARC311	2	1	2	0
ARC492	Rendering Techniques & Animation II	ARC241	2	1	0	2
ARC493	Advanced Computer Techniques	ARC241	2	1	0	2
ARC494	Climatic Environmental Design	ARC251	2	2	0	0
ARC495	Architectural Photography	ARC111	2	1	2	0

Fifth Level Elective Courses

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC591	GIS Applications in Planning	ARC471	2	1	0	2
ARC592	Special Topics in Architecture	ARC322	2	2	0	0
ARC593	Environmental Planning Methods	ARC471	2	2	0	0
ARC594	Techniques of Environmental Control	ARC451	2	2	0	0
ARC595	Architectural Criticism	ARC421	2	2	0	0
ARC596	Building Conservation	ARC322	2	2	0	0
ARC597	Urban Planning Redevelopment	ARC471	2	2	0	0
INTD421	Interior Architecture Now	ARC322	2	2	2	0

2. Courses Descriptions

First Year

First Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC111	Basic Design Studio I	ARC011	4	2	4	0

The course presents a framework of knowledge on basic elements of design and visual thinking. Through studio and field based exercises, students will apply principles of composition such as balance, rhythm, contrast, emphasis and hierarchy by form 2D planar and 3D spatial compositions using different types of elements and material.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC141	Engineering Drawings	ARC011	3	1	4	0

This course provides students with fundamental knowledge and skills of Engineering and technical drawings such as different types of projections, drawing pattern, Dimensions, Scales, notation. The students shall learn how to use manual drafting techniques to produce orthographic drawings, auxiliary views, and section drawings of geometric solid and voided forms starting from simple forms to complex forms to lead them producing architectural drawings in different view such as Plans, Elevations, Section, and isometric, in addition to one and two vanishing point perspective.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC142	Freehand Sketching and Model Making	ARC011	2	1	2	0

The course presents an introduction to the fundamentals of freehand drawing and sketching through observation in three different steps; gesture drawing (sketching the basic forms without detail), contour line drawing (adding details of edges), and rendering drawing (adding shade shadow to present the depth and realism). It explains the use of freehand sketches as a mean to communicate visual concepts by expressing themselves using pencils, markers, and color pencils on paper or any other suitable media. Students shall enhance their skills of quick sketches, shades and shadows and different rendering techniques including water color. Finally it ends with guidelines of form generation and principles of abstracted physical Model Making for Architecture compositions using different materials such as carton paper, wood, plastic, acrylic, and foams

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC161	Engineering Math and Physics	MATH095	3	3	0	0

The course Emphasizes on understanding algebraic, numerical and graphical approaches making use of graphing calculators. The course, aims to develop in students the ability to understand matrix and its operation and the methods of using matrix to solve other mathematical problems. They will deal with

system of linear equations for two and three variables. This course illustrates the concepts of Geometrical Shapes, trigonometric functions and its application in the field of engineering disciplines. Moreover, the course presents Study of physics that will enable to understand the basics of illumination, vision, acoustic, heat transfer, ventilation, wind pressure, moisture in a building.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
IT102	Introduction to Computer Applications		2	1	0	2

The course divided to theory and practical parts.

Theoretical Part:

It presents an introduction to computer and information technology, and the basic computer concepts. This subject introduces survey of computers and information processing and their roles in society. It also introduces a historical perspective of computing, hardware, software, information systems, and human resources and explores their integration and application in business and other segments of society. It explains the binary number systems used in the computer systems, different types of computers, different types of hard ware, different types of software, different types of computer networks, and how is internet works and how to use web.

Practical Part:

Training students to use Microsoft Word, Excel and PowerPoint Applications in intermediate level.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ENGL103	English for Academic Purposes I	ENGL010	3	3	0	0

This English course aims to develop the student's Listening, speaking, reading and writing skill for study at university. During this course, the students will listen to a variety of texts in order to develop various skills and strategies. Furthermore, students will read a variety of texts to develop their reading skills and enhance their writing abilities over a wide range of academic genres. The module consists of a series of sequentially structured tasks which cover all the four language skills.

Second Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC112	Basic Design Studio II	ARC111	4	2	4	0

The course is designed to develop students' knowledge about design as a problem solving process. Students will explore design phases: analysis, synthesis, and evaluation of the design alternatives. Through studio and field based exercises, students will experience the fundamental parameters/constraints of architectural and interior design: Program, form, space, structure, context, subject and aesthetics.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC131	Introduction to Building Systems and Codes		3	3	0	0

The course provides basic principles and general understanding of different structural, conveyance and service systems and components in a building. Develop a conceptual framework for various options available. Help to conceive building systems not as a constraint, but as a scope for innovation. Provide a foundation for the ongoing exploration in upper level courses and in the design studio. It also exposes the students to an awareness of the purpose and existence of building codes and their implications on design considerations.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC101	Design Research Methods	ENGL103	2	2	0	0

The course introduce the Evidence-Based Design Approaches and provides an overview of diverse research methods, research process, and representation of data and findings to make design decisions based on the best research results and evidences. Research methods include literature review, survey strategies such as questionnaires, interviews, and observations techniques, and experimental studies, that with Emphasis on physical, social, and psychological needs of the occupants, type and character of the space, and cultural context.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC143	Drafting And Designing With Digital Media	IT102+ ARC141	4	2	0	4

This course introduces computers as tool in the drafting and designing effort enabling students to create, edit, export and print drawings and sketches in specific scale and units using computers Software. Students are introduced to AutoCAD, SketchUp Pro, ArchiCAD as effective tools used for accurate and fast drawing. All commands of such software are demonstrated to the students that will be enable them to produce both two-dimensional drawings and rendered three-dimensional digit models correctly and efficiently through a professional training on those software in the computer labs.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ENGL104	English for Academic Purposes II	ENGL103	3	3	0	0

This English course aims to develop the student's Listening, speaking, reading and writing skill for study at university. During this course, the students will listen to a variety of texts in order to develop various skills and strategies. Furthermore, students will read a variety of texts to develop their reading skills and enhance their writing abilities over a wide range of academic genres. The module consists of a series of sequentially structured tasks which cover all the four language skills.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
GS102	Creative Thinking		2	1	0	2

The course introduces the definitions, theories, and techniques of creativity and development of thinking skills and capabilities. Diverse techniques of generating and developing ideas are addressed such as six thinking hats, seeking for simplicity, mind maps, problem solving techniques, and brain storming. The students will apply those techniques in group and individual projects.

Second Year

Third Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC211	Architectural Design I	ARCH112	5	1	8	0

"Idea and methodology"

The course explores the construction of design methodologies and the composition process that explores the relations and the interaction between Idea and Language and their influence on shaping the space or the architectural object. The student will learn to give attention to detail and material and their implications on space.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC231	Building Construction	ARC131	4	2	4	0

The course provides an introductory overview of the various construction systems such as wall bearing, Skeleton and space system. In this introduction the students will be able to differentiate between the construction systems based system's features, structural properties, advantages, and disadvantages which enable the students to recognize the construction systems capabilities. The students are also introduced to the type of foundations, masonry constructions, dampness, heat and sound building insulations, and staircases, Furthermore, structural and non-structural building components are explored. Resulting from this course, students will gain a comparative knowledge of possible applications of construction systems in design studio, and creating execution drawings.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC261	Structural Analysis	ARC161	2	2	0	0

The course studies equilibrium of rigid bodies and the analysis of statically determinate structures. It includes an introduction to structural systems and basic analysis methods for beams, frames, and trusses, the definition of building structure through a scope of types of loading, supports, types of

structures, calculation of reaction components in simple beams, and beams with overhanging ends, determination of the internal straining action diagrams (N.F.D – S.F.D – B.M.D).

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC241	Rendering Techniques and Animation I	ARC143	3	1	0	4

The course introduces students to the world of 3D modelling. It is stepping forwards toward computer animated dynamic presentations – a tool that is widely used in the architecture practice. The course covers the development of rendered still images as animated field / frame – accurate recording. 3D STUDIO MAX is the basic software package handled through the course. However, all universal concepts will also be covered in this course, including human vision, camera angels, perspective correction, and finally, scene composition.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ENGL202	English Writing for Communication	ENGL104	3	3	0	0

This English course aims to develop the student’s Listening, speaking, reading and writing skill for study at university. During this course, the students will listen to a variety of texts in order to develop various skills and strategies. Furthermore, students will read a variety of texts to develop their reading skills and enhance their writing abilities over a wide range of academic genres. The module consists of a series of sequentially structured tasks which cover all the four language skills.

Fourth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC212	Architectural Design II	ARC211	5	1	8	0

“Architecture and the city”

The course explores the existing dialectical relation between architecture and the city in architectural design. The city is seen as cultural, sociological, political, historical entity which creates an environment of collective living. The student will learn to give attention to relations of larger scale and will integrate them in the construction of the design methodology of his architectural project/object.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC232	Working Drawing Documents I	ARC231	4	1	6	0

The course introduces the basic principles of working drawing techniques and methods. The students are requested to adjust and prepare their design project of (ARCH210) to prepare a complete set of drawings for execution including: drawings for construction (Plans, Sections, Elevations, Site plan, and Roof plan) in scale 1:50, different execution instructions (dimensions, level, symbols, openings models), Basic techniques of execution.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC221	History of Architecture I	ENGL103	3	3	0	0

The course covers architecture from Prehistoric, Mesopotamia, Old Egyptian, Greek, Roman and Islamic architecture, including an integration of Construction and structural form, art and the Influence of economic political social cultural technological and philosophical factors on architecture.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC251	Passive and Active Climatic Design	ARC131	3	3	0	0

The course provides information and instruments useful in developing an energy-conscious approach to design. Moreover, Studies climatic elements as environmental factors influencing architectural design. It will address the following issues: human physiology and thermal comfort, natural ventilation and orientation of buildings, global climatic factors, elements and classification of climate, thermal balance of the body, comfort scales, heat exchange of buildings, solar geometry, passive climatic control based on building form, orientation, building envelope, openings, building design, material selection, ventilation, and Active climatic control.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
GS133	History of Bahrain		3	3	0	0

Refer to College of Law / KU website

Third Year

Fifth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC311	Architectural Design III	ARC212	5	1	8	0

“Public/ private space of the building environment”

This course emphasizes on the existing notion of public space / private space that forms the building environment of the city. The student will learn to develop major control on the specificities of this notion in the elaboration of the design methodology of his architectural project/object giving importance and relevance to the sense of the place.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC331	Working Drawing Documents II	ARC232	4	1	6	0

The course is depended and expansion to Working Drawing I course. It introduces more advanced knowledge and skills of preparing the execution drawings in terms of details and material specifications. The students develop a complete set of detailed execution drawings for their previous project that developed on the course (ARC232) including different elements of building, Stairs, Openings, Accessories, & details (External and Internal finishing), Coordination between different technical installations and special details for specific elements within a chosen space.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC321	History of Architecture II	ARC221	3	3	0	0

The course covers and discusses architecture starting from the Early Christian era, passing through Byzantine, Romanesque, Gothic, Renaissance, Baroque and Rococo, and 18th century architecture. The course highlights the integration of Construction and structural form, art and the Influence of economic political social cultural technological and philosophical factors on architecture.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC361	Building Materials & Testing	ARC261	2	1	0	2

This course includes a study of basic Physical and mechanical properties of building materials used in construction with brief description of methods of testing and standardization. Classification of natural and manufactured building material is provided and the behavior and deterioration under natural conditions is also briefly described. The course will progress through the introduction to aggregate, concrete, cement, masonry, and steel as structural materials.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC362	Field Surveying	ARC161	3	2	0	2

This course covers the principles of measurements of distances, elevations, and angles. It also includes basic error theory in measurements and calculations, traverse field techniques and office calculations, basic principles of surveying and map making, levelling, contouring, theodolites and total station measurements.

Sixth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC312	Architectural Design IV	ARC311	5	1	8	0

"Functional Complexity"

The course is dealing with design of buildings with complex functional relationships as a result of accommodating various types of users groups. The key issue that students will apply in their designs is how to solve the expected conflict in circulation horizontally and vertically. Students are required to research technical considerations related to the building's structural systems, integrated systems, technical equipments as well as health and safety requirements.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC341	Building Information Modelling	ARC241	3	1	0	4

The course provides graduate students with the principles of Building Information Modeling (BIM) through the use of Revit Architecture. Students are introduced to the menus and tools of Revit Architecture including user interface, straight and flexing parameters, readymade and user generated custom families, massing, rendering with custom materials, Architectural working drawing detailing and documentations, and printing out the drawing and models.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC322	Bahraini and Regional Architecture and Art	GS133	2	2	0	0

The course raises the awareness of heritage architecture and art in Bahrain and the region, colonial architecture, urban development including modern and globalization architecture. There will be an emphasis on study field trips.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC332	Technical Installations	ARC131	2	2	0	0

This course covers the basics of all the building services through the scope of external supply and internal network in the building. It deals with hot and cold water and the sanitary systems. It also deals with electric supply and wiring, together with the internal communication network. It also covers the mechanical services of elevators, escalators and fire fighting equipments.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC363	Structural Design	ARC361	3	3	0	0

The course provides students with a basic knowledge of structural design for buildings. The course uses the basic structural theories given in structural analyses to study the behavior of reinforced concrete structures under design loads. It concentrates on the combination of the compressive strength of concrete with the tensile strength of steel reinforcements. An Introduction to the design of steel structures is given in order to get the student acquainted with their impact on architectural forms.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC323	Theory of Architecture	ARC321	3	3	0	0

Introduction to the meaning of architecture and its role in and relationship to society and the environment, basic architecture theories and design philosophies, and exploring the ways and means for the creative process

Fourth Year

Seventh Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC411	Architectural Design V	ARC312	5	1	8	0

“The urban fragment and the city”

The course emphasizes on the definition of an urban fragment and its architectural development. The student will learn to develop major control over the relations between an entity of building defining an urban fragment and their relation to the city. The student will develop his design methodology to include influences from the minor and major scale of the building.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC451	Environmental Control Systems	ARC251	2	2	0	0

The course covers the fundamentals and design of Electro-Mechanical systems that are used in adapting the internal environment of buildings to the accepted levels of human comfort. Students will study systems that are used in controlling temperature, humidity, heat gain and loss, ventilation and internal luminance.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC471	Introduction to City & Regional Planning	ARC311	3	2	2	0

The course introduces the students to origin and evolution of settlements and cities through history. Various forces and factors affecting the urban settlement forms are discussed. Students will study effect of industrial revolution on city structure; trends and theories of city and regional planning; Utopian ideas and reforms; Meaning, scope and significance of planning; basic concepts and goals of Comprehensive, Urban, Transportation, Land use, Economic, and Environmental Planning; Planning policies and regulations; public-private collaboration and community incentives. Students will have an overview of urban planning practice and regulatory environment in Bahrain.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC49X	Elective I		2	2	0	0

Refer to Elective courses descriptions.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC421	International Contemporary Architecture	ARC321	3	3	0	0

Follow on the development of major architecture' schools of thoughts, and trends in 19th century up to date, studying the built environment, major building designs, construction technologies and public spaces. Through the course, students will explore how design philosophies and school of thoughts influence the production of architecture

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
GS111	Arabic Language Skills		3	3	0	0

Refer to College of Law / KU website

Eighth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC412	Urban Design	ARC471	4	2	4	0

The course explains the evolution of Urban Forms and Spaces and Architecture and visual elements determining urban spaces. Moreover, urban spaces will be studied as expressions of social values, ideals, and technological innovation. Urban aesthetics; Perception, image, visual survey and design principles of urban spaces are among topics that will be discussed. The course highlights Urban context as a design parameter. The visual, functional and statutory requirements of urban spaces will be covered. The course covers design of community and urban level open areas and facilities; and stakeholders' collaboration in creating the human habitat. Urban regeneration, redevelopment and conservation projects and case studies will be analyzed and discussed.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC452	Lighting and Acoustics	ARC332	2	2	0	0

This course introduces students to the basics and physics of light and sound waves. It explains the behavior of these waves inside the building. Moreover, it discusses how to get the maximum benefit of both daylight and artificial light through the building design. Acoustic design considerations in theatres and similar buildings will be covered through studying proper finishing material that either reflect, absorb or deflect the sound waves.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC472	Landscape Architecture	ARC311	3	1	4	0

The course introduces students to Landscape as manifestation of cultural ideologies and act of humans in nature. An analysis of landscape elements, perceptual and technical aspects of outdoor areas, gardens, public open spaces, parks, and urban development will be covered. Students will practice the analysis, planning and design of outdoor spaces; hard and soft elements; circulation and linkages; planting and gardening; water and greens; external furniture and lighting; utility services and maintenance.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC481	Building Economics	ARC231	3	3	0	0

The course discusses feasibility studies, building initial cost, life cycle costing, cost planning, value engineering and cost-benefit analysis. Moreover, the course explains methods of estimation of direct and indirect building's costs.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC401	Graduation Project Research	ARC411 + ARC101	3	2	2	0

The course prepares students to the graduation project through preparing preliminary studies related to project aim and significance, similar international case studies, design guidelines, technical considerations and design program. It is a field-based course, in which students will present a site selection criterion, and then practice a comprehensive analysis of the site in terms of climatic, environmental, geologic, topographic and visual characteristics.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
LAW106	Human Rights		2	2	0	0

Refer to College of Law / KU website

Summer Semester (Between fourth and fifth year)

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC482	Architectural Training	Passing 125 Hours	6	0	12	0

The off-campus course prepares students for professional practice through enrolling them to a one semester training program in state-of-the-art architectural engineering firms. Alternatively, students may be trained in ministries that are dealing with built environment such as: Ministry of works, Municipalities and Urban planning affairs; Ministry of housing and engineering sections of other Ministries. Students are expected to practice the real work environment through a pre-planned training tasks that include design, detailing and construction site visits.

Fifth Year

Ninth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC511	Architectural Design VI	ARC411	6	1	10	0

“Constructing the problematic”

This course emphasizes on the construction of an architectural problematic related to a theme. The student will learn to formulate or to construct a relevant architectural problematic, and the strategy of intervention as a part of the process development of the building environment.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC59X	ELECTIVE II		2	2	0	0

Refer to Elective courses descriptions.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC581	Introduction to Project Management	ARC481	2	2	0	0

The course introduces students to the role of Project Manager and Project Management team in the stages of construction projects starting by briefing stage, passing through designing stage, tendering stage, construction stage and ending with commissioning stage. Project scale, managerial cycle, life cycle, risk management and delivery methods will be explained. Time scheduling techniques including BERT and CPM will be practiced in the course. An introduction to cost planning and estimation and contract types will be presented. Construction site planning management and Health and Safety standards will be highlighted.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC582	Specifications and Bill Of Quantities	ARC361	3	3	0	0

The course presents an introduction to international Construction specifications systems. Specifications classification base, purpose and coding of American MasterFormat™ and UniFormat™ are explained in details. Moreover the course covers role of quantity surveyors, quantity-take of process, pre-printed forms and calculation of waste in construction and building material. Students will be trained to prepare detailed bill of quantities.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC551	Sustainable Built Environment	ARC251+ ARC412	2	2	0	0

The course develops the framework of knowledge in fundamentals of sustainable design of built environment. Strategies for using sustainable material for buildings and urban spaces furnishing are covered. Moreover, energy and resources conservation mechanisms and green architecture principles are elaborated through analyzing national, regional and international case studies. The course builds on the knowledge gain in passive and active climatic design and urban design

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC521	Housing Theories	ARC471	3	2	2	0

This course covers Housing definitions, characteristics and problems. Dwelling as an architectural unit, Meaning of house and form and socio-cultural factors are tackled. Moreover, the course discusses Urbanization and migration; Formation of slums and squatters. The course points to Government's role; Delivery and actors; and Public housing. Sustainable solutions to low-income housing; Housing upgrading, Self-help housing are covered. There will be a reflection on history of Housing development and existing situation in Bahrain, problems and prospects. Residential neighbourhoods' elements, design and standards are also highlighted.

Tenth Semester

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC512	Graduation Project	ARC401	6	1	10	0

The course articulates graduation project exercise according to four phases that includes the problem definition as phase I, and the analyses of the urban context as phase II. In phase I, the student shall present an architectural theme that will help him to formulate a relevant problematic in connection with the urban and architectural development of Bahrain or the surrounding region of the Gulf area. In phase II, the student will articulate analyses of the urban context in order to articulate the sense of the place. The third phase includes the strategy of intervention, and the Materialization of Ideas and Forms into a language. The student will develop a concept/solution that has the potential to influence and guide the development of the project. In phase IV, The student will give form to a spatial configuration that develops the elaborated concept/solution articulating a critical architectural and urban language.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC583	Professional Practice & Ethics	ARC581	2	2	0	0

The course presents a comprehensive introduction to professional practice of Architecture Engineering. It covers licensing process, office initiating, financial structure, risk insurance, liability insurance, legal

dimensions and office management. Moreover, the course highlights the types of contracts emphasizing on FIDIC contract systems. Ethics related to professional practice and activity form another integral part of the course.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC584	Building Regulations & Codes	ARC411	2	2	0	0

The course explains the concept of building regulations and statutory environment set by regulatory authorities concerned with built environment. Moreover, the course covers a wide range of national, regional and international buildings codes related to health and safety, energy efficiency, green architecture and thermal and water insulation. Bahraini codes and regulations will be discussed through real-life case studies.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC59X	ELECTIVE III		2	2	0	0

Refer to Elective courses descriptions.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC531	Shop Drawings	ARC331	3	1	4	0

The course introduces students to language of shop drawings. Moreover it prepares students to read and interpret shop drawings. Geometric dimensioning and tolerancing is practiced through real –life case studies.

Elective Courses

Fourth Level Elective Courses

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC491	Interior Design	ARC311	2	1	2	0

The course is an introductory course aiming to familiarize the students with the scope and fundamental issues of interior design, with an emphasis on qualities of interior space. Issues of form, scale, proportion, light, colour, texture, materials, furniture and fixtures will be addressed. Space quality and its effect on perception will be examined. Adaptive re-use design considerations will be explained.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC492	Rendering Techniques & Animation II	ARC241	2	1	0	2

The course provides hands on experience to students seeking the use of available 3D rendering and animation tools in their professional practice. It goes beyond traditional perspectives and covers

dynamic motion animated presentations. Giving the fact that 3D animation will help clients to better realize 2D designs.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC493	Advanced Computer Techniques	ARC241	2	1	0	2

The course covers computer based post production techniques related to professional animated films. The Adobe™ professional package including Adobe™ premiere and Adobe™ after effect will form the practice environment of the course. Moreover, the course presents students to the concept of virtual reality and augmented reality and their applications in Architecture.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC494	Climatic Environmental Design	ARC251	2	2	0	0

The course uses the basic natural resources on different scale of architecture, such as shade and shadow, natural light, natural ventilation, and ecological materials to optimize the building in Hot-dry and Hot-humid climate regions and obtain an energy efficiency in Passive environmental design strategies, using arch-nature and BIPV/CIPV.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC495	Architectural Photography	ARC111	2	1	2	0

The course covers principles and visual qualities resulting from interaction between light and form. Students will be trained to fundamentals of digital architecture photography. Point of view, exposure, color balance and distortion corrections are among rectification steps that will be covered through the course. Camera and software-based photo editing and retouching techniques will be practiced through external and internal photography of buildings as well as architectural models.

Fifth Level Elective Courses

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC591	GIS Applications in Planning	ARC471	2	1	0	2

Geographic Information Systems (GIS) technology is an integrated system and crosscutting technology that has become indispensable for representing, analyzing, modelling and understanding the built environment and in fact all manner of spatially distributed phenomena. This course provide the students with the understanding of significant of GIS for city and regional planners, urban designers, land developers and architects whether they work in governmental or in the private sectors. The students are introduced to menus, tools and toolboxes of ArcGIS Desktop, ArcMap, and ArcCatalog interfaces that enable students to create different kind of databases input, edit, analyze, query, and export interactive urban data to create current, proposal, and suitability maps for decision making of urban planning problems.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC592	Special Topics in Architecture	ARC322	2	2	0	0

This course has a dynamic and flexible content. It intends to present a very specific topic to students. The topic is taught by a professional who is highly specialized in that topic. Sustainability, green architecture, urban conservation, urban development, buildings codes, architectural schools of thinking, and urban planning challenges are among specific topics that may be covered in the course.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC593	Environmental Planning Methods	ARC471	2	2	0	0

The course links between environment and planning through explaining the effect of land-use on environment and vice versa. Effect of planning on sustainability of environmental resources and Environmental Impact Assessment principles are among topics that are covered through the course.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC594	Techniques of Environmental Control	ARC451	2	2	0	0

The course introduces methods of integrating environmental control system in architecture design without conflicting with building structure and construction elements. Students will be introduced to technical environmental measurements equipments. Moreover, the course covers principles of selecting the appropriate environmental control systems according to building design and users' needs.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC595	Architectural Criticism	ARC421	2	2	0	0

The course introduces students to significant architectural criticism essays written by key persons who contributed in writing and documenting historical dynasties of architecture. Students will learn writing techniques of architectural criticism. Moreover, students are expected to analyze and criticize architectural/urban/ planning projects in terms of function, aesthetics, meaning, symbolism and other related factors.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC596	Building Conservation	ARC322	2	2	0	0

The course introduces the classification of buildings according to historical value and significance. It further discusses how to deal sensitively with historical buildings and their contexts when it comes to conservation. Students will learn various conservation techniques such as restoration and adaptive re-use. Moreover, the regulatory environment related to building conservation will be tackled.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
ARC597	Urban Planning Redevelopment	ARC471	2	2	0	0

The course demonstrates an analysis of urban planning methods; fundamentals of land use, transportation, infrastructure, economics and social changes in a development process. Students will experience urban development techniques and community participation in planning. Contemporary issues in planning, effect of globalization, livability, land reclamation phenomena, waterfront development, gated community and conservation are among topics that will be discussed in the course. Case studies of infill and redevelopment projects in kingdom of Bahrain will be analyzed.

Code	Course Title	Prerequisite	Cr.	Teaching Hours		
				Lec.	St.	Lab
INTD421	Interior Architecture Now	ARC322	2	2	2	0

The course addresses the existing, occurring and what is popular right now in the profession of interior architecture. The course investigates the most recent interesting interior design project, well known interior design/architecture firms, celebrated designers, and experimental work. Range of design concepts and approaches are discussed that indicates the relationship between design and contemporary economic, social and culture context.