



ACADEMIC PROGRAM:
Bachelor in Architectural Engineering
Courses Descriptions
2020 - 2021

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010: DESIGN DOMAIN

AED111- Basic Design Studio I AED112- Basic Design Studio II ARE211- Architecture Design I ARE212- Architecture Design II ARE311- Architecture Design III	ARE312- Architecture Design IV ARE411- Architecture Design V ARE412- Architecture Design VI ARE511- Architecture Design VII ARE512- Graduation Project Design
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Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
AED111	Basic Design Studio	5		3	1	4	0

Course Aims	<ul style="list-style-type: none"> To introduce students to Human-Centered Design in term of human dimensions and proportions To raise the students' awareness about the principles of composition and the basic fundamentals of elements and principles of design To develop the student's skills on creating 2D planar and 3D spatial compositions using hands-on-skills To introduce students to the design process To develop the student's visual and verbal communication skills through presenting design proposals and developing students' design portfolio.
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Course Description: Common Course to AE & IND

The course presents a framework of knowledge and sense on basic elements and principals of design. Through studio, students will apply principles of composition such as proportion, balance, rhythm, contrast, emphasis and hierarchy by forming 2D planar and 3D spatial compositions using sketching, drawing, colouring, crafting and modelling skills. Students will also experience the fundamental parameters of Interior Design: Program, form, space, structure, context, user and aesthetics. These parameters expose student to different scenarios where he/she is supposed to creatively solve problems and generate innovative design ideas. Students are initiated to communicate and debate their design proposals within design reviews and jury sessions.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr			
					L	ST	Lab
AED112	Basic Design Studio II	6	AED111	3	1	4	0

Course Aims	<ul style="list-style-type: none"> To raise awareness on anthropometrics & ergonomics To introduce students to define space and principles of spatial organization To raise the students' awareness on extra-personal space and ergonomics To develop the student's skills on scale and proportion To introduce students to the design process To develop the student's visual and verbal communication skills through presenting design proposals and developing students' design portfolio.
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Course Description: Common Course to AE & IND

The course presents a framework of knowledge on anthropometric & ergonomics, scale & proportions, space and spatial organization, and sense of place. Through studio, students will apply anthropometric measurements and explore ergonomic designs. Students will be exposed to the fundamental parameters of defining space and composition of space using spatial organization principles. These parameters expose student to different scenarios where the student is supposed to creatively solve problems and generate innovative design ideas. Students are initiated to communicate and debate their design proposals within design reviews and jury sessions.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE211	Architecture Design I	6	AED112	5	1	8	0
Course Aims	<ul style="list-style-type: none"> To explore the relationship between function, spatial requirement and human scale as means of generating architecture. Create awareness on spatial ordering principles and functional relationship. To develop the student's skills on communicating ideas using sketching, drawing and models. To use proper drawing conventions and rendering techniques in order to demonstrate an understanding of building construction materials and building elements. (Additionally, include domestic bathroom layout & domestic kitchen layout & staircase details) 						
Course Description: Functional Responsive Design The course aims to emphasize the design relationship between form, space and function. The process of designing is an inquiry involving hands-on activity. The students will design the space to meet the functional requirements. In the studio, we explore human scale, function-spatial relationships, and place-making through the use of light and form. The students will be sketching, drawing perspectives, creating models, and projecting sections and elevations from the floor plans. Participate in field trips to get a sense of scale and experience in architecture.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE212	Architecture Design II	6	ARE211	5	1	8	0
Course Aims	<ul style="list-style-type: none"> To understand the nature of human behaviour, socio-cultural values and how it can be incorporated, facilitated, modified, and influenced through architectural design. To develop students' skills on collecting and analyzing user related information Critical review on reference project to understand the relationship between multiple activities, user requirements and concept generation. To develop students' skills on integrating short and medium span structural principles, horizontal construction, and construction materials in developing the design process, To use digital media to communicate design idea and to produce drawings with proper drawing conventions and rendering techniques in order to demonstrate an understanding of building construction materials and building elements. (Additionally include public bathroom layout & commercial kitchen layout & staircase details). 						
Course Description: Community Responsive Design: A large proportion of our human experience and social interaction occurs in the buildings in which we live and work. This course examines how to develop an architectural design for small social and cultural groups. During the course, students are guided to understand the user requirements and translate the design brief according to community values and needs. The process will use questionnaires, interviews, observation, and other methods to understand the user needs of a selected socio-cultural group. The students will also be exposed to some theories like personal space, defensible space, environment & social behavior to develop a basis for community architecture. As							

part of the skill development process, a reference project will be evaluated to understand the genesis of ideas and how they are transformed into creative concepts and spatial arrangements that are responsive to specific user categories. The project will focus on a multi-functional building and students will use digital tools to create drawings that emphasize proper drawing conventions. The students will explore integrating short and medium span structural system with low-rise construction and various construction materials.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE311	Architecture Design III	7	ARE212	5	1	8	0

Course Aims	<ul style="list-style-type: none"> To increase awareness of environmental issues, environmental design strategies, and environmentally responsive design To develop the design as a response to the site analysis and environmental forces. To develop student’s skills on collecting and analysing environmental information. To develop the design considering building energy consumption, material use and green building strategies. (Shading strategies, Daylighting Strategies, Ventilation Strategies, Sustainable Material) To develop students’ skills on designing low rise, medium span, multiple building complex. To develop students’ skills on building technology & building services requirements (Integration of medium span structural systems, building envelope details, building services layouts, escalators & lifts, building safety requirements).
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Course Description:

Climate Responsive Design:

The course examines and analyses the design process from a perspective of environmental design. It considers environmental issues that demand architectural solutions. The students consider aspects of human comfort, green building, energy efficiency, climate responsive design, construction technology, and bylaws when creating design concepts. As part of their design solutions, students are guided to consider environmental conservation, recycling, and waste management considerations. The complexity of the projects will produce single function, multiple activities, multiple buildings. The design will explore medium span structures using different sustainable composite construction materials and techniques. Field trips will be arranged to gain experience in sustainable design and waste management.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE312	Architecture Design IV	8	ARE311	5	1	8	0

Course Aims	<ul style="list-style-type: none"> To provide students with an understanding of new spatial concepts integrated with state-of-the-art technology in generating architecture. To enhance students’ applied knowledge skills in developing a design as a response to building-by-laws and fire regulations requirements. To enhance students’ skills in integrating building enclosure [façade], building structure, building services system [MEP], building internal transportation
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	<p>systems and building safety requirements in generating medium rise architecture.</p> <ul style="list-style-type: none"> To enable students to incorporate considerations of energy consumption, material use and green building strategies. To provide students with advanced knowledge of vertical design: space planning, zoning, circulation, concept development and integration of environmental strategies and site.
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Course Description:
High-tech Design:
 This studio will focus on exploring smart buildings and high-tech architecture. Redefining the role of state-of-art technologies and building systems integrated with new spatial concepts in generating architecture. Exploring level of integration between building enclosure [façade], building structure [structure & construction], building services [MEP] and the Space [volume] while responding to building by-laws and fire regulations. Students shall work individually on an advanced building design focusing on commercial, hospitality and health-based activities with a medium scale, multi-storey [maximum 20 storeys] development. It is expected that the students produce a design developed to an appropriate level of technical resolution (circulation systems, technical services systems and layouts, firefighting & safety requirements) as evident in their drawings and construction proposals. Students shall demonstrate an understanding of formal ordering and building-concept development as related to the tectonic form determinants.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE411	Architecture Design V	8	ARE312	5	1	8	0

Course Aims	<ul style="list-style-type: none"> Formulate a comprehensive design brief for a socio-cultural design based on research and theoretical support. To provide students with an advanced understanding the nature of human behaviour, socio-cultural values and how they can be incorporated, facilitated, modified, and influenced through architectural design. To enhance student’s skills in critical architectural research to cultivate greater understanding of the meaning of forms and space specifically from social, political, and cultural perspectives. To enhance student’s skills in collecting and analyzing user related information Develop a design intent based on a functionally workable design, respond to bylaws, integrate building enclosures [façade] with building structure and construction system, building services system [MEP], internal transportation systems, and building safety requirements to generate architectural designs
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Course Description:
Socio-cultural Design Research:
 This studio will formulate the first part of design research studio sequence with final architecture graduation design project. Student will generate the design brief as response to socio-cultural values, political concepts & economic issues related to build environment. The emphasis to create a critical architectural research approach with critical reviews of case studies, data analysis, research finding and develop the concept with strong theoretical support. The complexity of the projects will produce multiple function, multiple activities, high density, multiple buildings integrating master planning skills and to produce a preliminary schematic design.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE412	Architecture Design VI	8	ARE411	5	1	8	0
Course Aims	<ul style="list-style-type: none"> Assess and analyse environmental issues to formulate a comprehensive design brief that are amenable to innovative sustainable design solutions. To develop student's skills in critical architectural research to cultivate greater understanding of the meaning of forms and space specifically from sustainable design perspective. Explore the use of performance analysis tools to evaluate the design solution. Integration of advanced building technologies and applied sciences achieving a sustainable architectural solution. Develop a design intent based on a functionally workable design, respond to bylaws, integrate building enclosures [façade] with building structure and construction system, building services system [MEP], internal transportation systems, and building safety requirements to generate architectural designs. 						
<p>Course Description: Sustainable Design Research: This studio will formulate the second part of design research studio sequence with final architecture graduation design project. The focus will be on developing a design that requires sustainable and environmentally responsive solution. The design brief is generated as response to environmental comfort issues, environmental issues, energy related issues, environmental disaster issues, resources issues, and ecological issues. Apart from exploring theories, technologies and techniques, the students will be guided to prepare a performance-based-analysis of their sustainable design solutions using building simulation or green building rating tools.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE511	Architecture Design VII	8	ARE412+ ARE461	5	1	8	0
Course Aims	<ul style="list-style-type: none"> Formulate a comprehensive design brief for a sustainable urban design project based on urban contextual issues, research and theoretical support. To enable students to understand the nature of urban public spaces, indoor and outdoor spatial relationship, urban contextual forces, and how they can be incorporated, facilitated, modified, and influenced through architectural design. To enhance student's skills in collecting and critically analyzing urban contextual data and information to cultivate greater understanding of the meaning of forms and placemaking. Develop a design intent in relation to practice of sustainable architectural solution that responds to complex urban issues. Expose to public building design and understanding of their operations through case study / site visits. Develop a design intent based on a functionally workable design, respond to bylaws, services system [MEP], and building safety requirements to generate architectural designs 						

Course Description:**Urban Context Design Research:**

This studio will formulate the third part of design research studio sequence with final architecture graduation design project. The emphasis is placed on developing a design capability at a range of smaller scale – urban block (precinct) by assessing the urban landscape elements (including streets, squares, linkages, and urban amenities) and urban form in creating sustainable and liveable cities. The subject will provide an opportunity for students to evaluate, define, interpret, and approach problem solving and to suggest a creative, practical, and sustainable solutions to a range of typical urban design problems. The students will also be exposed to some theories like personal space, defensible space, environment & social behavior, and urban conservation theories to develop a basis for urban context responsive design. Case studies will be within urban Brownfield, waterfronts, city centres, new towns, and other emerging urban spatial entities. The students will make visits to public buildings or similar nature of projects to gain experience and understanding of their operations.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE512	Graduation Project Design	8	ARE511+ ARE551	6	0	12	0
Course Aims	<ul style="list-style-type: none"> • To reflect architecture knowledge and competency in formulating a design project • To solve design problems based on sound research and ideas. • To demonstrate a high level of proficiency and versatility in communication and representation techniques • To be professionally ethical and responsive to the values of humanity and sustainability. • Develop a design intent based on a functionally workable design, respond to bylaws, integrate building enclosures [façade] with building structure and construction system, building services system [MEP], internal transportation systems, and building safety requirements to generate architectural designs. 						
Course Description:							
<p>This is the culminating studio of the Architecture degree and provides students with the opportunity to develop a complex and comprehensive architectural project that builds upon knowledge gained from the preceding projects either in <i>socio-cultural design research (Architecture Design V) OR sustainable design research (Architecture Design VI) OR urban context design research (Architecture Design VII)</i>. The students will develop a comprehensive and innovative schematic design emphasizing a complete design process, site planning, space planning, integration of technologies, construction and structural understanding, building regulations and sustainable design solution supported by findings from graduation project research.</p>							

020: SUSTAINABLE BUILDING & TECHNOLOGY DOMAIN

AED121- Engineering Mathematics AED122- Building Physics & Material Properties ARE221- Building Construction, I ARE222- Building Construction, II ARE223- Land Surveying ARE321- Passive and Active Climatic Design ARE322- Construction Drawings I	ARE323- Building Services ARE324- Structural Analysis & Application ARE421- Sustainable Indoor Environment ARE422- Building Materials ARE423- Construction Drawings II ARE424- Structural Design ARE425- Building Performance Analysis* ARE521- Shop Drawing*
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Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
AED121	Engineering Mathematics	5	MATH095	3	2	2	0

Course Aims	<ul style="list-style-type: none"> To raise the awareness of students about potential of mathematics and physics in Engineering. To enhance mathematical and scientific skills of students. To Increase the cognizance of students about basic algebra, matrices and trigonometric functions and their applications. To identify, formulate and solve engineering problems.
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Course Description: Common Course to AE & ID:

The course prepares students to develop their basic concept of mathematics and its applications in engineering disciplines. The course work includes matrices operations and methods to solve engineering problems, system of linear equations, trigonometric functions and applications, it covers also the fundamentals of differentiation and integration and their applications in engineering area. The course will cover the basic knowledge and skills of mathematics needed for the next levels of study.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
AED122	Building Physics & Material Properties	6		3	3	0	0

Course Aims	<ul style="list-style-type: none"> To develop knowledge on principles of physics in relation to lighting, acoustics, airflow, fluid dynamics and heat transfer. To develop knowledge on thermal, optical, acoustical of building materials To develop awareness of influence of basic physic in design related discipline
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Course Description: Common Course to AE & ID:

This course contains two main parts. In the first, the students recall their knowledge of physics relative to buildings, such as heat transfer, light properties, sound behavior, airflow, and fluid mechanics. The course provides an understand physics and their influences and application in the building design. In the second part, the subject will cover aspects of thermal, optical, acoustical properties of building materials. The knowledge on material properties will enhance their understanding of selecting material for different requirements of the design.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE221	Building Construction, I	6	AED112	2	2	0	0
Course Aims	<ul style="list-style-type: none"> To identify and describe an ability to review concepts, features, properties and components of different construction systems. To assess different systems and available options for structural, construction and design solutions. To integrate concepts and systems of building construction with architectural design. 						
Course Description: The course provides an understanding of various construction systems and structures methods by differentiating between features and properties of each. Students will be able to recognize the parameters and advantages and disadvantages of these systems and available options and materials. The course enables students to select the appropriate structure system for their architecture projects specially with wide-space structures. The topics cover bearing walls and framed building structures including brick, block, concrete and steel, to wood structures. Design and construction issues related to structural and non-structural building components will be discussed including foundations, floors, staircases, openings, dampness and insulation works are further explored. This course delivers real life practical skills of executing building models using real structural drawings and materials.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE222	Building Construction II	6	ARE221	2	1	0	2
Course Aims	<ul style="list-style-type: none"> Understanding the types of exterior and interior building detail and finishes Understanding the sequence and main elements of detailing of building elements. To create an awareness on the importance of architectural details and finishes in higher level courses and design studios. 						
Course Description: Introduction to the concepts and elements of architectural detailing. The course will focus on exterior and interior wall details and finishing materials, floor details, door and window details and roof details. The course also will introduce the details of installing insulation and dampness with building elements. It also exposes the students to an awareness of the purpose of building codes and their implications on design considerations. This course delivers real life practical skills of executing architectural detail models.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE223	Land Surveying	6	AED121+ IT102	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To understand the information shown on site and survey plans The ability to make a linear survey of a parcel of ground and corrections to produce a scaled drawing of the results. To recognize the different types of levelling instruments, methods and applications 						

Course Description:

The course introduces the fundamentals of land surveying as well as measurements and instruments, it is an introductory course to plane surveying as related to the construction industry. The course enables students to learn how to measure, record, adjust and calculate directions, distances and elevations using standard field instruments like distance measurement tools, compass, theodolite, level, and total station. Topics are designed to cover basics of linear measurements (observations, corrections and calculations), surveying mathematics, map scale, basic error theory in measurements, traverse field techniques and levelling works & applications.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE321	Passive and Active Climatic Design	7	AED122	3	3	0	0

Course Aims	<ul style="list-style-type: none"> To raise awareness about climatic factors and their influence on architectural design and the built environment. Developing detailed knowledge about climate responsive passive & active design principles Integrate passive & active climate responsive design principles with architecture and the built environment in order to achieve sustainability.
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Course Description:

In this course, students are introduced to the tools and information necessary to conceptualize climatic responsive designs. Students will learn more about how climate affects architectural design through detailed discussions. The class will cover the following topics: global climate factors, elements of climate, building orientation, thermal exchange through the building envelope, shading strategies, natural ventilation, and active climate strategies such as BIPV, geothermal energy, and wind energy. The students will investigate climatic responsive design using scale models and real building data and engage in interactive, hands-on activities. .

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE322	Construction Drawing, I	7	AED231+ ARE222	4	2	0	4

Course Aims	<ul style="list-style-type: none"> To demonstrate knowledge on constructability and assembly of building elements by producing architectural construction drawings with reference to the local design and construction method To design and develop drafting skills by completing one set of architectural construction drawing for a moderate sized building, including all plans, elevations, several sections, details for special areas, and typical wall details. To demonstrate knowledge on use of different tools in preparing drawings and details.
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Course Description:

This course investigates the professional significance of drawings as a mean of introduction for architectural communication on the site plan, shapes the design of architecture by digital techniques. Students engage a wide variety of drawings to represent plans, sections, elevations, site plans, and details. The course integrates the content of the preceding visualization sequence

courses while allowing students to expand their representational repertoires and develop individual expressive approaches.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE323	Building Services	7	ARE222	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To understand the basic principles and appropriate application and performance of the water supply, sewage systems, vertical transportation system, active firefighting systems and communication systems in buildings. To develop students' ability to assess, select, and integrate building services systems into building design. To evaluate the sustainable performance of building services system 						
<p>Course Description: This course covers the fundamental understanding of building services through the scope of external supply and internal network in the building. It will provide an overview of the various issues that have to be adequately combined to offer the occupants a physical, functional and psychological well-being. It will discuss topics related to hot and cold water, sanitary systems, elevators & escalators, active firefighting systems and communication systems. Students will be exposed to different green building rating systems as a tool to evaluate building water usage and recycle systems in buildings.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE324	Structural Analysis and Application	7	ARE121 + ARE222	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To impart the main principle of building structural analysis and the behaviour of determinate structures. To be aware of the various methods involved in the analysis of determinate structures To enable students to realise the real structures behave. To integrate concepts and of building structure systems and architectural design 						
<p>Course Description: The course demonstrates equilibrium of rigid bodies and the analysis of statically determinate structures. It provides an introduction to structural systems and basic theories and analysis methods of beams, frames, trusses and arche structures. It illustrates building structures components including the different types of structural elements, loads, forces and support types. The course contents include the calculation of reactions in determinate beams, frames, trusses and arche structures. It enables students to analyse and draw of the internal straining action diagrams of normal force (N.F.D), shear force (S.F.D) and the Bending Moment (B.M.D) for determinate beams and frames.</p>							

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE421	Sustainable Indoor Environment	8	ARE321	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To appraise the effect of Environmental Control Systems in the building design. To explore various low energy strategies to solve building indoor environmental issues. To be able to make early design decisions regarding the appropriateness of various systems and design concepts through an understanding of system functions. 						
Course Description : The course considers the study of the thermal and luminous behavior of buildings. It will address the following contents: basics of HVAC systems, basics of artificial lighting system and acoustics. Students will be exposed to energy use, energy conservation and different green building rating systems as a tool and other techniques to evaluate building environmental performance.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE422	Building Materials	7	AED122+ ARE322	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To understanding the structural behavior of building materials. To identify the physical and mechanical properties of building materials. To develop knowledge and understanding of finishes and characteristics of materials To use appropriate materials for the building, considering the health and safety regulation. 						
Course Description: Study of the basic physical, mechanical and non-mechanical properties of building materials used in construction such as steel, concrete, cement and other common building materials. The course study the essential common building materials such as aggregates, cement, steel, concrete, etc. Description of testing methods and their standards. Classification of natural and manufactured building materials. Material behavior and deterioration under natural conditions. Furthermore, exposes the students to understand the thermal, acoustical properties of building materials, lifecycle analysis of materials.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE423	Construction Drawings, II	8	ARE422	4	2	0	4
Course Aims	<ul style="list-style-type: none"> To produce architectural construction drawings with reference to the local design, construction and related professional practice. To complete one set of architectural construction details for a moderate sized building. To prepare all execution drawings and details in a suitable scale for selected materials, services and fixtures in kitchen and toilets. 						

	<ul style="list-style-type: none"> To prepare all execution drawings and details in a suitable scale. 						
<p>Course Description: This course provides advance technical drawings for the site plan after the introduction to the key to drawings in level I, produce documents for buildings, urban and landscape contexts in connection with national and international codes for sustainability, green buildings, and technologies details of constructions. Assignments and site visits provide students the opportunity to work practically with a wide variety of tools digitally with emerging computer-driven technologies in order to enrich the students' skills and align their background about the documents' needs for projects.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE424	Structural Design	8	ARE324+ ARE422	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To classify types of basic reinforced concrete members usually included in building structures. To identify design requirements of building reinforced concrete members under flexure, shear, and axial loading. To prepare students to deal with commonly used standards and codes of RC. design. To provide students with basic design skills to integrate concepts and systems of building construction with architectural design. 						
<p>Course Description: The course provides the principles of analysis and design of reinforced concrete (RC) structural elements based on the British Standard for the design reinforced concrete BS-8110. It includes load distribution in reinforced concrete buildings, limit state analysis, analysis and design of the typical structural elements in the building: slabs, beams, columns and foundations. the course demonstrates steel detailing and the serviceability requirements for reinforced concrete elements.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE425	Building Performance Analysis	8	AED331	3	2	0	2
	<ul style="list-style-type: none"> To understand the important issues associated with energy performance of buildings. To create awareness on parameters influencing on building performance analysis To understand how to interpret climate & weather data, building performance related data To develop the essential skills for theoretical analysis and experimental study of building energy use. 						
<p>Course Description: This is an introductory course in energy use and energy efficiency in buildings. After taking this subject, students will understand how energy is used in buildings, the thermal, cooling loads & lighting loads of buildings, as well as being able to creatively employ their</p>							

understanding of energy fundamentals and knowledge in energy use in buildings, innovatively in their design projects. Students will learn about several building simulation programs and investigate the buildings' performance through them.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE521	Shop Drawing	8	ARE423	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To enable students to learn the techniques of preparing shop drawings which are used for construction and fabrication of buildings elements and parts design This course is intended to impart training in the preparation of the production of shop drawings and detailing for building projects with specific reference to the code of practice as per local and international recognized codes (Bahrain Standards, GCC Standards, International Standards) 						
<p>Course Description: The course provides specialized knowledge of drawings related to the architectural and interior design fields. This course aims to teach students how to represent the drawings with more accurate and detailed finishing, their functionality. The subject also provides them with the professional skills to prepare the drawings that fit the needs of higher-level or standards of buildings with all structural elements and dimensions with details using the digital programs. Students at the end of this course will be able to prepare professional architecture and interior details.</p>							

030: DESIGN COMMUNICATION DOMAIN							
AED131- Engineering Drawings & Design Communication AED231- Drafting and Designing with Digital Media AED232- Rendering Techniques and Animation AED331- BIM for Design & Construction Drawing							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
AED131	Engineering Drawings & Design Communication	5	-	3	2	2	0
Course Aims	<ul style="list-style-type: none"> To enhance the students' drawing skills To enhance the students' visual communication skills with different techniques To equip the students with reading designs and drawings by their sight sense and estimation of scale, portion and sizes. 						
Course Description: Common Course to AE & IND This course provides students with fundamental knowledge and skills of Engineering and technical drawings such as different types of projections, drawing pattern, dimensions, scales, annotation. The students 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, sections and isometric, in addition to one and two vanishing point perspective. The students apply different types of architecture and design representation including color, black and white toning, shade and shadow.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
AED231	Drafting & Design with Digital Media	6	AED131	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To enhance the students' CAD skills To enhance the students' visual communication skills with different computer's techniques To train the students on CAD utilization for developing readable, fast, accurate, and editable 2D and 3D architectural drawings. 						
Course Description: Common Course to AE & IND This course introduces students to computers as a 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 or ArchiCAD as effective tools used for accurate and fast drawing. All commands of such software are demonstrated to the students that enables them to produce both two-dimensional drawings and rendered three-dimensional digit models correctly and efficiently through a professional training on such software in the computer labs. The students apply CAD applications to develop complete set of architectural drawings including plans, sections, elevations, and perspectives.							

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
AED232	Rendering Techniques and Animation	6	AED231	3	1	0	4
Course Aims	<ul style="list-style-type: none"> To create awareness with modeling and rendering technology and its application on the design process. To train students on utilizing design communication software for developing rendered images and animated scenes for architecture and design projects. To equip students with digital visualization skills that help them in project-based courses. 						
<p>Course Description : Common Course to AE & IND</p> <p>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. 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. Image recurring and rendering applications are also introduced.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
AED331	BIM for Design & Construction Drawing	7	AED231	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To aware students with BIM technology and its application on the design process. To train students on utilizing BIM applications for developing architecture and design projects. To equip students with digital visualization skills that help them in project-based courses. 						
<p>Course Description : Common Course to AE & IND</p> <p>The course introduces students to the principles of Building Information Modelling (BIM). Students have knowledge of functions of menus, options and tools of (BIM) application including user interface, straight and flexing parameters, system and non-system families, massing, components of building elements such as walls, windows, doors, floors, roofs, stairs, ramps and ceiling. It is a training-based course enable students to create design ideas, asses building models in terms of lighting, shadow, heating, and veneration, and communicate the designs through producing rendered perspectives, animated senses, complete sets of working drawings, shop drawings, building details and construction documents such as BOQ and quotations. students practice building information modelling technology to visualize, stimulate, document and assess spatial design projects in which architecture engineering students focus on forms, spaces, building envelop, landscape and structure of building elements, while Interior design students focus on space, finishing materials, furniture and lighting and building elements' surfaces designs.</p>							

040: HISTORY & THEORY DOMAIN

ARE141- Theory of Architecture
 ARE241- History of Architecture I
 ARE242- History of Regional Architecture & Heritage
 ARE243- History of Architecture II
 ARE341- Modern & Contemporary Architecture
 ARE441- Housing Theories and Economics
 ARE442- Interior Design & Modern Art*

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE141	Theory of Architecture	5	-	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To demonstrate knowledge and understanding of basic elements, theories and ordering principles of Space, Form & Place in relation to human scale To use methodologies to reflect the principles into Space, Form and Place. To develop skill to analyze and translate retrieved information from precedent & resources 						
<p>Course Description: The course explores critical modern theories, strategies, concepts and notions of thinking, composing, forming and perceiving space. The course provides basic understanding of form, space & order and basic vocabulary of architecture design. Reference work are critically analysed (experiencing case studies & architectural & non architectural projects) in workgroups through hands-on activities, graphical drawings and architectural criticism, to show how an idea is translated into a form/space and vice versa.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE241	History of Architecture 1	6	ARE141	2	2	0	0
Course Aims	<ul style="list-style-type: none"> To enhance students' knowledge of Egyptians, Greek and Roman Architecture. To be able to learn the evolution of architecture, art and sculpture of each civilization and its architectural form expressions. To enhance students' understanding about the development of built environment according to the culture, society, religion and economy. 						
<p>Course Description : The course includes a concise chronological survey of key periods of architectural history such as Egyptian, Greek, and Roman by investigating some particular architectural themes, ideas, forms, construction and structural technologies, culture, art and sculpture. The students will be able to study and analyze some significant</p>							

buildings to identify the evolution of the built environment and construction technology and their inter-dependencies that affected to architectural development across the periods.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE242	History of Regional Architecture & Heritage	6	GS133+ ARE241	2	2	0	0

Course Aims	<ul style="list-style-type: none"> To be able to learn the evolution and principles of regional architecture, art and sculpture of each civilization and its architectural form expressions. To be able to assess and differentiate types conservation requirements based on retrieved information from case studies. To understand documentation methods, and international standards in the practice.
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Course Description :
 This course studies the roots and genealogy of traditional architecture and explores the relationship between design, history, and theory through a broad range of lectures in which the analysis of buildings, cities, landscapes, and site visits supports the articulation and criticism of fundamental concepts. The course embraces the last century in the history of the Arabian Gulf cultural heritage when traditional methods of construction engaged the local society culture to adopt the local climate and respect the identity of the local place. In this course, students will expand their knowledge about the local and regional historical cities' development and gain a new vision about the importance of conservation from the past.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE243	History of Architecture II	6	ARE241	2	2	0	0

Course Aims	<ul style="list-style-type: none"> To enhance students' knowledge of Early Christian era passing through Byzantine, Romanesque, Gothic, Renaissance, and Baroque & Rococo architecture. To be able to learn the evolution of architecture, art and sculpture of each civilization and its architectural form expressions. To enhance students' understanding about the development of built environment according to the culture, society, religion and economy. To be able to analyze the elements contributing to the identity and essence of architectural expressions of these civilizations.
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Course Description :
 The course includes architectural history starting from the Early Christian era, passing through Byzantine [history I], Romanesque, Gothic, Renaissance, and Baroque & Rococo architecture, 18th Century Architecture. It highlights the construction and structural methods, form, art and various factors affected to the evolution of the built environment, and architectural developments. Examples of ancient buildings in these periods are studied and analyzed to enhance the students' ability to understand the theoretical bases and architectural concepts.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE341	Modern & Contemporary Architecture	7	ARE243	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To Explore the contemporary work, theories, strategies, concepts, for the formation of space and its relationship with the design process. To use the architectural criticism and retrace the ideas that helped the development of the contemporary works To critically evaluate contemporary projects in relation to the build environment and building designs. 						
Course Description :							
The course explores modern and contemporary theories of architecture and their relation to the formation/elaboration/ development of the design process. Contemporary architects and their works (texts, projects and drawings) in relation to the build environment, major building designs, construction technologies and public spaces are studied/ critically analyzed (Ideas, form configuration, space,) in individual /workgroups through graphical drawings and architectural criticism.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE441	Housing Theories and Economics	7	ARE371	2	2	0	0
Course Aims	<ul style="list-style-type: none"> To demonstrate critical knowledge and understanding about the impact of global/local economics, culture and social behaviour on housing. To use Architecture as a tool by different factors on housing and culture. Understand the effects of spatial relationships through the application of proxemic theory, concepts of territoriality, perceptions of space in a cross-cultural context and behavior related to space utilization To identify and implement relevant solutions to development process of modern and contemporary houses. 						
Course Description:							
The course explores issues, concepts, theories, and principals that animate the process development of the different types/categories of modern and contemporary housing exercise in relation to local/global economics, culture and social behaviour. Housing and Architecture are illustrated, analysed and studied as tools used by different actors (private/public sectors, developers, engineers, architects, lawmakers...) for the development of neighbourhoods, cities and culture (new urban fragments, small and local expat communities...). It also explores theories like Defensible Space; Privacy, Territoriality, and Crowding; Personal Space; and Phenomenological Ideas of Dwelling.							

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE442	Interior Design & Modern Art	7	ARE212	3	2	2	0
	<ul style="list-style-type: none"> • Developing students' awareness of elements and principles of interior design and their applications. • Expose students to the Gestalt theory, abstraction, and Modern Art in relation to interior design theme • Expose students to current interior design firm and role of pioneer interior designers in the discipline 						
<p>This course exposes to interior layout design and finishing materials properties and specifications in terms of sources, locations, shapes, strength, workability, functionality, durability, sustainability, environmental compatibility, color, texture and construction technology of architectural interior spaces. The students will explore the influence of modern art movement and different interior themes. The course emphasizes on the applications of interior finishes and materials in the context of their relations with aesthetic values and visual expressions, human wellbeing and comfort.</p>							

050: DESIGN RESEARCH DOMAIN

AED251- Design Research Methods
ARE551- Graduation Project Research

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
AED251	Design Research Methods	6	AED111+ ENGL103	2	2	0	0
Course Aims	<ul style="list-style-type: none"> To develop knowledge on types of research methodologies applicable to discipline of architecture and interior design To raise students' awareness on methods and process of research To develop skills to acquire, retrieve and analyze resources, evidence and precedents. 						
<p>Course Description: Common Course to AE & IND The course provides an overview of diverse research types, methods, and processes related to design. This course covers different types of research according to different classifications; the importance of literature reviews; survey strategies, such as questionnaires, interviews, observations, and experimental studies; and different models of research. In this course, students learn about information collection, quantitative and qualitative analysis, and result from interpretation and representation using a variety of tools and methodologies. Students are taught to make design decisions based on research results and evidence.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE551	Graduation Project Research	8	AED251+ ARE412	3	1	4	0
Course Aims	<ul style="list-style-type: none"> To raise the students' awareness about the role of research as a significant phase in the design process and highlighting the evidence-based design approach To introduce the students to advanced design research types and methods Develop core skill to acquire, retrieve and analyse resources, evidences and precedents and communicate in written document To prepare the students for their graduation projects by evaluate material, resources and evidences to solve complex built environment issues backed by research and critical thinking 						
<p>Course Description: This course introduces the process of formulating appropriate research methodology to pursue a strong academic rigor in the student. The student will explore deeper by researching into a topic interest independently generated from their previous advanced design research studio [socio-cultural design research (Architecture Design V) OR sustainable design research (Architecture Design VI) OR urban context design research (Architecture Design VII)]. The findings will enhance and support the concept and application in the design with evidences based on sound research and improve the design brief that will be implemented in Architecture Graduation Design. The students will document the process as a final report using the skills gained throughout the course.</p>							

060: SUSTAINABLE ENVIRONMENT & LANDSCAPE DOMAIN

ARE361- Landscape Architecture
 ARE461- Urban Design*
 ARE462- Planning & Sustainable Cities*
 ARE561- Environmental Planning & Impact Assessment*

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE361	Landscape Architecture	7	ARE223	3	3	0	0

Course Aims	<ul style="list-style-type: none"> To understand landscape design theories, principles and elements To enhance students' skills and techniques in designing outdoor spaces with soft and hard landscape elements To enhance students' application skills in landscape projects.
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Course Description:

This course is intended to teach students the theories, concepts and basics of landscape architecture and design process of outdoor areas, such as Gardens, Parks, Public spaces, External furniture and Lighting by studying topographical features and various ways of incorporating such elements in to the design process or methods of shaping such sites addressing to the overall design. Moreover, the students will practice analysis, planning and designing with soft and hard landscape elements by considering environment and natural resources of the site. Further, relevant terms, vocabulary and necessary scientific terms will also be introduced to the students.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE461	Urban Design	8	ARE361	2	1	2	0

Course Aims	<ul style="list-style-type: none"> The ability to explain the theories and environmental factors affecting the evolution of urban forms through history. Understanding the methodologies and techniques of urban design process. To develop an urban design project
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Course Description:

The course introduces Urban Design as a distinctive intermediate discipline between Architectural Design and Urban Planning. The course starts with defining basic terminologies related to the built environment and the mutual relationship between man and Environment, and then explains history of Urbanization throughout the globe. The modern Urban Design theories are explained as well, with special focus on users' needs and human behaviour in built environment. Moreover, the urban design process (urban documentation, urban analysis, alternatives generation and evaluation, and urban detailing) is explained. A real urban design project is given to students in order to apply the taught course concepts.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE462	Planning & Sustainable Cities	8	ARE461	3	2	2	0
Course Aims	<ul style="list-style-type: none"> To understand and discuss the evolution, scope, potentials and constraints of planning and sustainable cities To identify and explore principles, theories of planning and sustainable cities Explore analytical techniques to gather relevant information To identify and explore sustainable or green city rating tools and its application in built environment 						
<p>Course Description: The course develops the framework of knowledge in the fundamentals of city and regional planning and sustainable principles of city planning. The course introduces the students to origin and evolution of settlements and cities through history, elements of city plan, transportation planning, zoning and land use patterns, sustainable city features. Expose to analytical frameworks to understand key city planning systems, city module strategies and implementation of sustainable rating tools.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE561	Environmental Planning & Impact Assessment	8	ARE461	3	3	0	0
Course Aims	<ul style="list-style-type: none"> Gain an understanding of the role of environmental planning & impact assessment in identifying issues and decision making Gain basic experience of environmental variables, and data collection To gain knowledge on environmental planning process and stages, and how it is applied 						
<p>Course Description: An overview of environmental planning is presented in this course, along with topics associated with environmental issues in Bahrain. Students will explore some of the potential challenges facing planners as well as some of the tools to address those challenges. The course will cover topics such as environmental planning and policymaking, global and local environmental issues, criteria and methods of environmental impact assessments, urban ecology & ecosystems and their influence on the urban environment.</p>							

070: MANAGEMENT & PROFESSIONAL PRACTICE DOMAIN

ARE371- Building Regulations & Codes
 ARE470- Architecture Internship Training
 ARE571- Specifications and Quantity Surveying
 ARE572- Professional Practice & Ethics
 ARE573- Construction Project Management

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE371	Building Regulations & Codes	7	ARE212	3	3	0	0

Course Aims	<ul style="list-style-type: none"> • To develop a framework of knowledge about building regulations. • To raise students' awareness about types of national and international building codes. • To develop students' ability to judge any building in terms of its compliance with regulations and codes. • To enable students to balance between freedom in design and following regulations and codes.
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Course Description:

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 [Benayat system, Bahrain], regional and international buildings regulations & codes, building fire regulations and planning regulations. The Bahraini codes and regulations will be discussed through real-life case studies.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE470	Architectural Internship Training	8	ARE371 + Complete 125 Cr.Hrs	4	0	0	0

Course Aims	<ul style="list-style-type: none"> • To translate knowledge and skills of architecture acquired in the classes into a professional setting. • To acquire knowledge of the industries, organizations, regulations, and procedures involved in translating design concepts into buildings and integrating plans into overall planning. • To gain knowledge on the management theories and business principles related to running both an architects' practice and architectural projects, recognizing current and emerging trends in the construction industry. • To improved communication and teamwork collaboration in a professional setting
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Course Description:

In this course, the student is required to complete an internship programme by engaging in practical training for a period of 300 hours in an architectural firm or in businesses related to the construction industry. The course enables students to acquire professional practice in

architecture engineering discipline, awareness of the administrative structure and management system of engineering companies, participating in different project phases including initiation, planning, execution, completion and construction site visits. and to be involved in documentation process, meetings, while acknowledging professional ethics and work commitment as well.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE571	Specifications and Quantity Surveying	8	ARE423+ ARE223	3	3	0	0

Course Aims	<ul style="list-style-type: none"> To raise the awareness of students about Specifications and Quantities system in construction industry. To interpret architectural documents with use of coding, into technical writing of specification, To differentiate units used in measuring quantities of works in construction industry. To prepare students to write professional bill of quantities for tendering stage, putting into consideration the adjustment of quantities for waste.
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Course Description:
This course provides an introduction to the international specifications systems in construction industry and the procedures and techniques involved in preparing quantities of various construction items. Students learn specific aspects of estimating, including materials, quantity surveying (take-offs), labor costing, and final pricing. Detailed estimates for each major construction discipline will be taught, based upon construction project documents. The course contents include illustration to the elements of the construction project, estimates types and methods, methods of taking out quantities, calculation of earth work, rate analysis and the methods and types of the applied international specifications

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE572	Professional Practice & Ethics	8	ARE423	2	2	0	0

Course Aims	<ul style="list-style-type: none"> To understand and explore types of architectural practices and their organizational structures. To familiarize students with the legal responsibilities of the profession and legal duties To understand and explore the architect's plan of work and scale of fees To familiarize students with architects' code of conducts in producing ethical designers that care for the civic society, built and natural environments and future generations.
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Course Description:
This course introduces students the essentials of office practices, the many definitions of client and their roles in the design process, the legal responsibilities of the profession, the importance of continuous professional development and the obligation the profession has to

provide to the civic society. Students will be exposed to different stakeholders involved in design process and their responsibilities, identify types of architectural practices, legal duties of the architect, plan of work, pre-contract procedures and contract procedures and professional code of conduct.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE573	Construction Project Management	8	ARE423	3	3	0	0
Course Aims	<ul style="list-style-type: none"> • To introduce students to the principles of project management with emphasis on construction projects management. • To raise the awareness of students about multi-disciplinary nature of construction industry • To enable students to differentiate between the roles of different parties involved in the construction industry • To present students to different types of risk that may face construction projects according to their delivery methods • To raise the awareness of students about different types of construction projects contracts • To present an overview of cost estimation process in construction projects. • To display various methods of projects time scheduling • To highlight the importance of health and safety regulations in construction sites. 						
<p>Course Description:</p> <p>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.</p>							

080: ELECTIVE 01 DOMAIN [Level 500]

ARE581- Advance Rendering Techniques & Animation
 ARE582- Communication for Architects
 ARE583- Architectural Photography & Cinematography
 ARE584- Building Economics & Real Estate
 ARE585- Heritage & Building Conservation

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE581	Advance Rendering Techniques & Animation	7	AED232	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To train students with different modeling and coding software and digital architecture, computational design, rendering techniques, and its application on the design process and project. To equip students with kinetic, parametric design, and digital visualization skills that help them in project-based courses. 						
<p>Course Description: The course introduces students to the world of 3D modeling and coding of different software, computational design, and digital architecture as well as animation. It is stepping forwards toward Computational Design, and computer-animated dynamic presentations – a tool that nowadays is widely used in the architecture practice. The course covers the development of digital architecture including kinetic, parametric design, and animation.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE582	Communication for Architects	7	ENGL202	3	2	2	0
Course Aims	<ul style="list-style-type: none"> To understand how to use communication to empower, develop and process ideas. To develop skills in project coordination, adaptability and life-long learning capability 						
<p>Course Description: This course emphasis on the role of effective communication between different actors of the design project and its impact on decision making. It explores the different strategies of communication/representations for architects to use during the different phases of their design process to illustrate their work during meeting with clients or other actors. Verbal and non-verbal language (drawings, sketches, diagrams, videos, animations) are used/ illustrated/ evaluated as a mean to empower, exchange, develop and process ideas.</p>							

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE583	Architectural Photography & Cinematography	7	AED231	3	2	2	0
	<ul style="list-style-type: none"> Understand what architectural photography is Expose to photo shooting & filming techniques and equipment that are particular to architectural photography Documentation of an exterior or interior of a building 						
<p>Course Description: This course will teach students to create successful images of exterior architecture, interior architectural design, as well as architectural models. The student will become a highly competent creative digital photographic image creator with accurate exposure, proper color correction, and excellent printing output. They will successfully use specific digital tools for the architectural image. Further, explore on film documentation skills using film cameras with perspective/parallax control. Master's in creative image enhancement using current software.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	La b
ARE584	Building Economics & Real Estate	7	ARE441	3	3	0	0
Course Aims	<ul style="list-style-type: none"> An in-depth understanding of the forces that determine property prices and how these might change over time To raise student's awareness about basics of economic theory and its relation to building construction To form a comprehensive framework of knowledge regarding feasibility study in construction industry focusing on buildings projects To develop student's awareness of information and analytical studies needed for estimation of direct and indirect cost of building construction projects 						
<p>Course Description: This course provides an economic perspective on markets and policy related to the real estate sector. The subject will discuss the theory of urban land and housing markets, the principle of time value for money, rate of return on real estate projects the spatial development of cities, Ethical principles in real estate operations. Analyzing and evaluating real estate projects. Real estate appraisal.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE585	Heritage & Building Conservation	7	ARE242	3	2	2	0
Course Aims	<ul style="list-style-type: none"> Understanding conservation profession levels, types, fields of interests. Understanding the social and economic role of conservation as well as the international conventions standards in the practice 						

	<ul style="list-style-type: none">• Work on a conservation project applying the suitable assessments techniques, recommended treatments and propose use that's contribute to the for community.• Assessment of individual heritage buildings and collective areas.
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Course Description:

The Course has the task of conservation for the heritages from the local, regional, and international levels, and will consist of study in depth of the conservation and reuse of the architectural heritage in Bahrain with various schools and experiences. Students will acquire knowledge of different consolidation and restructuring techniques, both borrowed from tradition and developed from new technologies and new materials that suit the opera of work. At the end of the course, the student will be able to conserve a building respecting its history, location, and cultural background.

080: ELECTIVE 02 DOMAIN [Level 500]

ARE586- Advanced Computer Techniques
 ARE587- Architecture & Virtual Reality
 ARE588- Introduction to Remote Sensing
 ARE589- GIS Application in Planning

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ARE586	Advanced Computer Techniques	8	AED331	3	2	0	2

Course Aims

- To develop knowledge and understanding on the advance applications and technology that related to the graphics and the visual communications
- To develop students' ability of creating an advanced post-production presentation and advance animated films
- To develop skills utilizing the computer applications to produce and communicate the project to a third party. help being professional applications package by using the most various commands and tools
- To train learners on real-world tasks encountered by the professional users of Applications for professionalism of both Architectural design and Interior Design

Course Description:
 This course approaches the students to the world of the graphics and visual communication applications to present their work, ideas, concepts, and projects presentation in a very effective and professional way. The graphics and visual communication applications such as but not limited to adobe Package software "adobe Photoshop, adobe after effect, adobe illustration, adobe InDesign, adobe premiere, adobe animate, and adobe character animator" and so on.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE587	Architecture and Virtual Reality	8	AED331	3	2	2	0

- Developing students' awareness of advanced built environment interactive simulation media
- Expose students to the applications of virtual reality, augmented reality and mixed reality in architecture and built environment
- Expose students to different software that are used in creating virtual environments

This course will expose students to understanding architecture through technologies such as virtual reality, augmented reality, immersive audio, and mixed reality. The course will experiment with a range of immersive technologies and learn the fundamentals of immersion, narrative, character, and environment creation.

Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE588	Introduction to Remote Sensing	8	ARE223+ ARE461	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To gain familiarity with a variety of physical applications of remote sensing in preparing urban design & planning projects documents To provide basic experience in the hands-on application of remote sensing data through visual interpretation and digital image processing 						
<p>Course Description: The course provides the basics of remote sensing, characteristics of remote sensors, and remote sensing applications in urban planning and environmental applications. Students will be able to understand the structure of remotely sensed data and how to retrieve the needed information and to decide which remote sensing techniques suite their specific needs. The course contents introduce the structure of satellite orbits, sensor ranges and characteristics, image acquisition and data collection, basics of image processing and interpretation. The course presents the integration of remote sensing and GIS to urban planning and environmental inquiries as well.</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr.Hr	Teaching Hours		
					L	ST	Lab
ARE589	GIS Application in Planning	8	ARE223+ ARE461	3	2	0	2
Course Aims	<ul style="list-style-type: none"> To learn how to use and utilize GIS Software capabilities in preparing Architecture and urban planning projects documents To analyse the urban context and contribute in problem solving of urban development. 						
<p>Course Description: 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 provides 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.</p>							

090: UNIVERSITY COURSES

IT102	Introduction to Computer Applications
ENGL103	English for Academic Purposes I [Architecture Engineering]
ENGL104	English for Academic Purposes II
GS102	Creative Thinking
GS133	History of Bahrain
GS111	Arabic Language Skills
LAW106	Human Rights
ENGL202	English Writing for Communications

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
IT102	Introduction to Computer Applications	5		2	2	0	0
Course Aims	<ul style="list-style-type: none"> To have an overview of basic computer application. To enable to work effectively with a range of office applications. To operate with word processing functions, spread sheets and power points. To use web browser to access information 						

Course Description: University Subject

This is an introductory course focusing on fundamental concepts of computer hardware and software and familiarizes with a variety of computer applications, including word processing, spreadsheets, databases, and multimedia presentations. This course covers the internet-based applications, working with email and browsing the websites. This course helps the students to learn basic computer Application.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ENGL103	English for Academic Purposes	5	ENGL010	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To focus on diction, sentence structure, punctuation and mechanics required for varied professional communication. To improve critical reading and listening in the formal context. To express ideas fluently in a well-organized manner. 						

Course Description: University Subject

This is an introductory course that prepares the students to communicate in correct English for academic and professional purposes. Students enhance their reading, writing, listening as well as speaking skills through classroom activities and compose ideas in varied specified formats. This course will help the students to develop contextual analysis, teamwork, word processing, documentation and professional communication.

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ENGL104	English for Academic Purposes	5	ENGL103	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To be able to express ideas at an academic level and respond to associated questions. To enhance reading and writing skills for academic and business purposes. To improve competent speaking skills using effective delivery strategies. 						
Course Description: University Subject This is a course that develops the interpretative skills related to listening, speaking, reading and writing tasks that constitute professional communication. This course covers a process-based approach namely brainstorming, drafting, developing, revising as well as editing in writing and speaking tasks, plus skimming as well as scanning for the interpretation of the text in reading and listening tasks systematically. This course helps the students describe events, make comparisons and express their preferences and recommendations.							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
GS102	Creative Thinking	5	-	2	2	0	0
Course Aims	<ul style="list-style-type: none"> To identify the concept of creativity, its level and themes. To understand creative thinking skills and distinguish them from the tools of thinking (creative techniques). To train the student to have an effective creative problem-solving process. To employ creative thinking patterns in all areas of life: personal, academic, and functional. 						
Course Description: University Subject							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
GS133	History of Bahrain	5		3	3	0	0
Course Aims	<ul style="list-style-type: none"> Learn about the history of Bahrain through the ages. Highlight historical, intermediate, modern and contemporary historical transformations. Appreciate the civilizational contribution of Bahrain regionally and internationally. 						
Course Description: University Subject <p style="text-align: center;">THIS COURSE IS TAUGHT IN ARABIC</p>							

Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
GS111	Arabic Language Skills	5		3	3	0	0
Course Aims	<ul style="list-style-type: none"> To use linguistic knowledge, analytical skills, and cultural experience in analysing and criticizing texts. To provide the student with the basics of reading and analysing poetic texts. To enable the student to understand and analyse the audible texts. To develop the student's reading abilities according to a gradual and coherent methodology. To enable the student to express himself in a sound, accessible and understandable language. To develop the student's communication abilities with others in simple, standard Arabic. 						
<p>Course Description: University Subject</p> <p style="text-align: center;">THIS COURSE IS TAUGHT IN ARABIC</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
LAW106	Human Rights	5	-	2	2	0	0
Course Aims	<ul style="list-style-type: none"> Gain legal knowledge of human rights. Gain the skills necessary to apply legal norms to the human rights problems and issues raised and evaluate them and to suggest appropriate responses in light of the principles of international human rights law. Using patterns of analytical thinking in the areas of human rights. 						
<p>Course Description: University Subject</p> <p style="text-align: center;">THIS COURSE IS TAUGHT IN ARABIC</p>							
Course Code	Course Title	NQF Level	Pre-requisite	Cr. Hr	Teaching Hours		
					L	ST	Lab
ENGL202	English Writing for Communications	6	ENGL104	3	3	0	0
Course Aims	<ul style="list-style-type: none"> To use and understand relatively complex English expressions. To communicate in English as an international language. 						

Course Description: University Subject

This is a course in English as a foreign Language that builds upon the critical, analytical and research skills to prepare students for future academic study. This covers compiling reviews, reports, notes, summaries, presentations as well as cite references. This course develops the students' academic reading strategies, ability to differentiate literal and inferential meanings plus competent speaking skills to defend their observations.