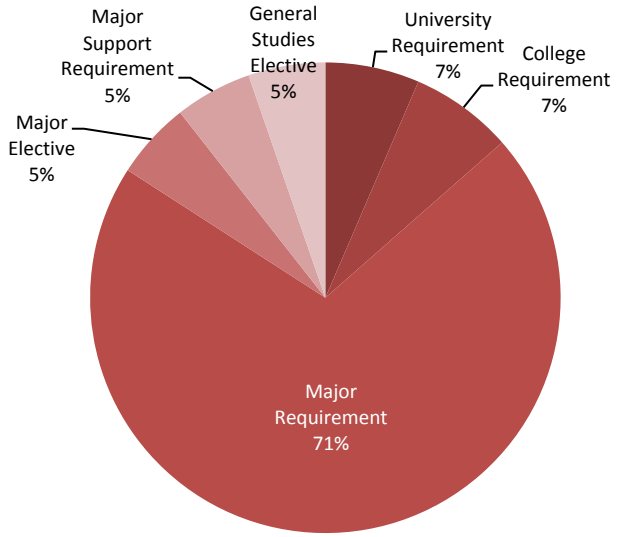
Bachelor of Architecture 2014

Program Components

Course Type	CRD
University Requirement (UR)	11
College Requirement (CR)	12
Major Requirement (MR)	119
Major Elective (ME)[1]	9
General Studies Compulsory Course (MSR)	9
General Studies Elective (GSE)[2]	9
Architectural Training (Yes)	0
Total Credit (CRD)	169



[1] Student must choose three elective courses from Major Elective (**Professional Studies)** Courses list. One at a time.
[2] Student must choose three elective courses from Liberal Arts Courses. One at a time (Sem 2, Sem 7, Sem 10)

Electives - Liberal Arts & Sciences (some examples) Electives - Professional Studies

MCM 150	Multimedia Skills(Sem 2)
ART XXX	Freehand Sketching(Sem 2)
SOCIO 161	Introduction to Sociology(Sem 7)
PSYC 103	Introduction to Psychology(Sem 7)
XXX	Any other University Liberal Arts course approved by the advisor- any semester

Teaching Language: English

Detailed Study Plan

Year 1 - Semester 1

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 110	Basic Design I	0	6	3	MR	------	Yes
ARCG 111	Architectural Graphics I	0	6	3	MR	------	Yes
ARCG 112	Surveying in Architecture	1	4	3	MR	------	Yes
MATHS 101	Calculus I	3	0	3	CR	------	No
ENGL 101	Communication Skills I	3	0	3	CR	------	No
HRLC 107	Human Rights	2	0	2	UR	------	No

Year 1 - Semester 2

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 120	Basic Design II	0	6	3	MR	ARCG 110 &ARCG 111	Yes
ARCG 121	Architectural Graphics II	0	6	3	MR	ARCG 110 &ARCG 111	Yes
PHYCS 107	Physics for Building Design	3	0	3	MSR	------	No
MATHS 102	Calculus II	3	0	3	CR	MATHS 101	No
ENGL 102	Composition and Reading II	3	0	3	CR	ENGL 101	No
GSE XXX	Elective - Liberal Arts	3	0	3	GSE	------	No

Year 2 - Semester 3

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 210	Architectural Design I	0	10	5	MR	ARCG 120 &ARCG 121	Yes
ARCG 211	History of Architecture I	2	0	2	MR	ARCG 120	Yes
ARCG 216	Environmental Systems I	2	2	3	MR	PHYCS 107	Yes
ARCG 213	Architectural Construction I	1	2	2	MR	ARCG 120 & ARCG 121	Yes
ARCG 215	Computer Aided Architectural Design I	1	4	3	MR	ARCG 121	Yes
CEG 210	Structural Systems I	3	0	3	MSR	MATHS 102 & ARCG 120	No

Year 2 - Semester 4

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 220	Architectural Design II	0	10	5	MR	ARCG 210	Yes
ARCG 221	History of Architecture II	2	0	2	MR	ARCG 211	Yes
ARCG 223	Architectural Construction II	1	2	2	MR	ARCG 213	Yes
ARCG 225	Computer Aided Architectural Design II	1	4	3	MR	ARCG 215	Yes
ARCG 226	Environmental Systems II	2	2	3	MR	ARCG 216	Yes
CEG 220	Structural Systems II	3	0	3	MSR	CEG 210 & ARCG 210	No

Year 3 - Semester 5

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 310	Architectural Design III	0	10	5	MR	ARCG 220 & ARCG 216	Yes
ARCG 313	Architectural Construction III	2	2	3	MR	ARCG 223 & CEG 220	Yes
ARCG 314	Theory of Architecture I	2	0	2	MR	ARCG 220	Yes
ARCG 316	Environmental Systems III	2	2	3	MR	ARCG 226	Yes
ARCG 317	Urban Design	1	2	2	MR	ARCG 220	Yes
ARCG 318	Vernacular Architecture	2	0	2	MR	ARCG 221	Yes

Year 3 - Semester 6

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 320	Architectural Design IV	0	10	5	MR	ARCG 310	Yes
ARCG 323	Islamic Architecture	2	0	2	MR	ARCG 318	Yes
ARCG 325	Housing	2	0	2	MR	ARCG 317	Yes
ARCG 326	Theory of Architecture II	3	0	3	MR	ARCG 314	Yes
ARCG 327	Building Service Systems	2	2	3	MR	ARCG 313	Yes
ARCG XXX	Elective - Professional Studies	3	0	3	ME	ARCG 310	Yes

Training Requirement

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 399	Architectural Training	0	0	0	MR-Training	Completion of 85 credits	No

Year 4 - Semester 7

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 410	Architectural Design V	0	10	5	MR	ARCG 320	Yes
ARCG 412	Working Drawings I	0	8	4	MR	ARCG 313 &320 &327	Yes
ARCG 413	Contracts & Implementations of Documents	3	0	3	MR	ARCG 320	Yes
ARCG 414	Contemporary Architecture	3	0	3	MR	ARCG 326	Yes
GSE XXX	Elective - Liberal Arts	3	0	3	GSE	------	No

Year 4 - Semester 8

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 420	Architectural Design VI	0	10	5	MR	ARCG 410	Yes
ARCG 423	Working Drawings II	0	8	4	MR	ARCG 412	Yes
ARCG XXX	Elective - Professional Studies	3	0	3	ME	ARCG 410	Yes
ISLM 101	Islamic Culture	3	0	3	UR	------	No
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	------	No

Year 5 - Semester 9

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 510	Architectural Design VII	0	10	5	MR	ARCG 420	Yes
ARCG 511	Graduation Project I - Program Stage	2	0	2	MR	ARCG 420	Yes
ARCG XXX	Elective - Professional Studies	3	0	3	ME	ARCG 420	Yes
ARAB 110	Arabic Language Skills	3	0	3	UR	------	No

Year 5 - Semester 10

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 520	Graduation Project II - Design Stage	0	14	7	MR	ARCG 511	Yes
ARCG 521	Architectural Professional Practice	2	0	2	MR	ARCG 413	Yes
ARCG 522	Project Management	1	2	2	MR	ARCG 413	Yes
GSE XXX	Elective - Liberal Arts	3	0	3	GSE	------	No

Major Elective Coures (Professional Studies) [1]

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
Semester 6							
ARCG 328	Interior Design for Architects	3	0	3	ME	ARCG 310	Yes
ARCG 329	Computer Animations	3	0	3	ME	ARCG 310	Yes
ARCG 330	Advanced Building Technologies	3	0	3	ME	ARCG 310	Yes
ARCG 331	Special Topics In Architecture	3	0	3	ME	ARCG 310	Yes
Semester 8							
ARCG 424	Landscape Architecture	3	0	3	ME	ARCG 410	Yes
ARCG 426	Advanced Topics in Computer Applications	3	0	3	ME	ARCG 410	Yes
ARCG 427	Research Methods In Architecture	3	0	3	ME	ARCG 410	Yes
Semester 9							
ARCG 555	Energy Conservation in Buildings	3	0	3	ME	ARCG 420	Yes
ARCG 557	Conservation of Buildings	3	0	3	ME	ARCG 420	Yes
ARCG 559	Behavioral Factors In Architecture	3	0	3	ME	ARCG 420	Yes

Course Description

Course Code: ARCG 110 **Course Title:** Basic Design I
Role of Basic Design in architectural context. Design elements: point, line, shape, form, space, color, texture, and light. Design principles: proportion, harmony, rhythm, emphasis, dominance, focal point, balance, and unity. Spatial relationships: space within a space, adjacent spaces, interlocking spaces, spaces linked by a common space. Types of design organizations: centralized, linear, clustered, radial, and grid. Two and three dimensional design problems emphasizing creative thinking and processing the given information.

Course Code: ARCG 111 **Course Title:** Architectural Graphics I
To acquaint the student with equipment and instruments used in architectural drawing through simple drafting assignments based on plane geometric construction; application of orthographic projection theory in drafting the planer components (vertical, horizontal) of solids. The use of parallel projections (viz. axonometric, isometric etc.) in drafting geometric solids.

Course Code: ARCG 112 **Course Title:** Surveying in Architecture
Surveying instruments and their use. Mapping the site; determining the surface configuration, contour lines and dimensions of the site features such as existing buildings on site, roads, sidewalks, plants etc. Sectional drawings of site, definition of slopes in third dimension. Producing measured drawings of buildings and building elements.

Course Code: ARCG 120 **Course Title:** Basic Design II
Basic information on color, texture and light and their effects on perception of spaces and surfaces. Relationships and differences between abstract and architectural design. Functional definition of a space; identifying users' activities and requirements. Movement through space and/or space groups. Space requirements for activities, circulation, furniture, and equipment. Functional relationships among activity areas and/or spaces. Emphasis will be placed on creativity, conceptual thinking and implementation of information given in Basic Design I.

Course Code: ARCG 121 **Course Title:** Architectural Graphics II
Drafting capabilities in 3-dimensional representation of architectural mass and space, with the aid of perspective projection for architectural interiors and exteriors. Shades and shadows in plans and elevations, as well as shadows in perspective projections. Enhancing architectural communication techniques with the aid of instruments in a variety of assignments.

Course Code: PHYCS 107 **Course Title:** Physics for Building Design
Fundamentals of heat transfer through building envelope: Air to air heat transmittance (U), internal and external surface conductance (h), thermal conductivity of building materials (k). Relationships between interior finishing materials and (U) values.
Nature of light, light transmission, reflection and absorption. Basic properties of light (photometric quantities): Light intensity (I), luminous flux (lx), illumination level (E), luminance (L). Photometric laws: Abney's law, inverse square law, cosine law.
Nature of sound: Audible sounds. Sound quantities: Sound intensity level (I) and sound pressure level (p).Sound reflection and absorption in enclosed spaces. Reverberant sound and reverberation time (RT). Sound transmissions through partitions and building envelope. Sound reduction index.

Course Code: ARCG 210 **Course Title:** Architectural Design I
Architectural Design I is intended to build upon the ideas and skills developed in the core courses of Basic Design. It is an introductory design course aiming at understanding principles and processes of solving architectural problems in a studio setting. Students are encouraged to explore fundamental architectural concepts of space, form, composition, function, circulation, orientation, as well as the aesthetical issues.

Course Code: ARCG 211 **Course Title:** History of Architecture I
The architectural heritage of ancient civilization, Egyptian, Mesopotamian, Greek and Roman, and initiating the form concepts pertaining to these cultures. To study particular examples examining the various factors affecting the evolution of the built environment and ensuing architectural developments, the appreciation of the theoretical bases and architectural concepts underlie these accomplishments. The course also includes field trips and applied studies.

Course Code: ARCG 213 **Course Title:** Architectural Construction I

The concept of 'production of the built-environment' as a series of interrelated processes starting with initiation and extending to design, construction and operation & maintenance. An overall analysis of 'building construction' process. Viewing the building itself as a system, identifying its sub-systems such as, structure, enclosure, vertical transportation, mechanical, electrical, sanitary etc. Starting with the 'structural system', introducing major types of structures (such as, bearing wall, framed, shell, space structures etc.) employed in Architectural design in the past and at present. Review of principal types of building materials (such as, timber, stone, metals and concrete) that are generally applicable to the construction of different building sub-systems.

Course Code: ARCG 215 **Course Title:** Computer Aided Architectural Design I

Applying standard computer programs widely being used in the market to produce models and create working drawings. Current and potential digital applications of computers in the design profession.

Course Code: ARCG 216 **Course Title:** Environmental Systems I

Climatic elements which affect and interact with the building and human being. The interaction between man and climate. Human thermal comfort requirements. The interaction between climate and building. Means of sun protection, requirements and importance of natural ventilation shall be investigated. Thermal insulation requirements and thermo physical properties of building materials.

Course Code: CEG 210 **Course Title:** Structural Systems I

Fundamental concepts of structural modeling and structural behavior. Free body diagrams and equilibrium equations. Analysis of simple structural systems. Internal forces in trusses and beams. Shear force, bending moment and axial force diagrams. Centroids and moment of inertia. Stress and strain concepts. Axial, bending and shear stresses. Deflection of beams.

Course Code: ARCG 220 **Course Title:** Architectural Design II

Architectural Design II aims at deepening the understanding of architectural processes and concepts introduced in Architectural Design I. The projects seek to raise awareness of the multiple considerations that shape exterior and interior spaces of buildings. In addition to site analysis and basic structural considerations, gathering and analyzing information about human needs and aspirations are required to guide design development stages.

Course Code: ARCG 221 **Course Title:** History of Architecture II

The ramifications and concepts underlying the architectural heritage ranging from the early Christian, Byzantine, Romanesque, Gothic eras, through the Renaissance and Classical Revivals in Europe and USA. Various factors affecting the evolution of the built environment, and the ensuring of architectural developments. Examples of ancient buildings in these eras are studied and analyzed to enhance the students' ability to appreciate the theoretical bases and architectural concepts underlying these accomplishments. The course also includes field trips and applied studies.

Course Code: ARCG 223 **Course Title:** Architectural Construction II

According to the erection sequence, analysis of structural and vertical transportation systems of building. Site work: soils, excavation, slope retention and drainage. Sub-structure: foundations, basements. Superstructure: masonry bearing wall construction, steel and concrete framing, structural floors of steel and concrete and ground floors, roof structures. Vertical transportation systems: stairs, ramps and lifts.

Course Code: ARCG 225 **Course Title:** Computer Aided Architectural Design II

Advanced techniques and capabilities through applying standard computer programs for modeling, representation, lighting, materials, mapping and rendering.

Course Code: ARCG 226 **Course Title:** Environmental Systems II

Psychometric chart. Air conditioning, mechanical refrigeration, unitary systems, window unit, split unit, packaged units, central systems, air distribution systems, evaporative coolers, calculation of air-conditioning load, vertical transportation systems in buildings, elevator and escalator selection, an introduction to fire protection systems in building.

Course Code: CEG 220 **Course Title:** Structural Systems II

Behavior and design of overall structural systems for buildings made out of wood, concrete and steel materials. Systems used for resisting lateral loads such as rigid frames, braced frames and shear walls. Systems used to span long distances such as trusses and space frames, cables and membranes, arches, domes and shells.

Course Code: ARCG 310 **Course Title:** Architectural Design III

Architectural Design III emphasizes the environmental issues as a major determinant of architectural form. Analysis and synthesis of climatic information of the physical environment in deciding the orientation, form, layout, openings, shading devices, and built and open spaces. Traditional environmental control techniques in the present context.

Course Code: ARCG 313 **Course Title:** Architectural Construction III

Review of building enclosure: Roofing (low-slope roofs, steep roofs). Non-structural walls and partitions, windows and doors. Various types of cladding (masonry veneer, stone, precast concrete, GRC, metal, glass etc. claddings) and suspended ceilings. Finishes: materials and components for finishing walls (plasters, paints, gypsum boards, etc.) and floors (stone, ceramic and plastic tiling, parquet floors, terrazzo, carpeting etc.).

Course Code: ARCG 314 **Course Title:** Theory of Architecture I

The course introduces architecture as a creative domain and the numerous approaches that inform its practice. It examines the generative processes of other art forms such as music, and sculpture to construct an understanding of the process. It positions architecture within the historical and cultural domains and emphasizes its visual presence. In introduces the philosophies articulated by celebrated architects and offers an understanding of the value of architectural ideas in generating architecture.

Course Code: ARCG 316 **Course Title:** Environmental Systems III

Principles and requirements for good and comfortable vision. Light and its characteristics. Effects of colors on the design of buildings. Surface characteristics (reflection, diffusion, brightness, glare etc) natural and artificial illumination (design, integration and evaluation of performance). Principles and requirements for good acoustics. Sound and its characteristics. Effects of sound in building design. Design for good acoustics and noise control. Measurements and evaluation of acoustical performance (special emphasis to Mosques and Auditoriums).

Course Code: ARCG 317 **Course Title:** Urban Design

Introduction to Urban Design through three perspectives: a) Historical background - most significant utopian visions of the XVIII to XX century; b) City structure and context – cultural influence of urban form c) The public as a client, social responsibility and planning processes. These will be followed by the introduction of urban design principles, such as hierarchy and spatial composition: nodes and patterns, city image and identity of place, sense of place and place-making, social interaction and public space.

Course Code: ARCG 318 **Course Title:** Vernacular Architecture

Introduces vernacular processes of building and examines the formative forces and influences that contribute to the production of indigenous architecture in the world. Focuses on the significance of culture and tradition as a form giving force that shapes architecture and the settlement patterns by looking at local, regional as well as global cultures. Contrasts the significant differences between professional practice and peoples own buildings to derive lessons for a culturally relevant production of architecture.

Course Code: ARCG 320 **Course Title:** Architectural Design IV

In Architectural Design IV, students will be given an opportunity to apply the knowledge they have gained in architectural history and theory courses by working on appropriate architectural design problems in historical, urban or natural context. In this course, their understanding of Architectural design process will be further developed.

Course Code: ARCG 323 **Course Title:** Islamic Architecture

The course offers an introduction to Islamic architecture and an overview of the influence of Islam on the built-environment. It focuses on Islamic principles that shaped the built-environment such as privacy, neighbourhood, Waqf, inheritance and the direction to Quibla etc. and their evolution over time and regions giving rise to a variety of architectural forms in different contexts. A broad analysis of the development of Islamic cities and the building types such as mosques, markets and madrasas etc. is presented together with a reflection on the applicability of their principles in the contemporary architectural practice.

Course Code: ARCG 325 **Course Title:** Housing

The course provides an insight into the complex and multi-dimensional nature of housing as the spatial development of human habitations in response to social, economic, cultural, administrative, physical and environmental aspects guided by national policies. It introduces contemporary issues, their historical background and theoretical approaches and practices that have evolved over time. It explores the spontaneous development processes of people versus professional production processes. Its focus is upon understanding the architectural aspects to help architects to intervene into the design and planning of culturally appropriate human settlements.

Course Code: ARCG 326 **Course Title:** Theory of Architecture II

The course introduces architecture as a visual and spatial experience and the role of perception and habitation. It focuses on the emotional and tactile dimensions of built form and sensual and visual articulation of form and space as the means by which architecture could influence people. It offers an introduction to the ideas of 'space' and 'place'; definitions, meanings, and concepts and the ways in which spaces become places. Production of architecture is viewed as a transformation between imaginary places and real places whereby an understanding of architecture as 'place-making' is constructed. The course offers an approach to architecture based on the processes that generate ideas potent in creating meaningful poetic forms and places.

Course Code: ARCG 327 **Course Title:** Building Service Systems

Basic principles and appropriate application and performance of building service systems such as plumbing, electrical, vertical transportation, security, and fire protection systems.

Course Code: ARCG 410 **Course Title:** Architectural Design V

In Architectural Design V, students are expected to further develop their architectural design skills by also having a particular opportunity to apply the knowledge they have gained in technical courses by working on appropriate architectural design problems in any context. The 'design development' stage of the projects completed in this studio can be undertaken in ARCG 412 Working Drawings II course in the next semester.

Course Code: ARCG 412 **Course Title:** Working Drawings I

Introduction to techniques and graphics conventions and standards used in working drawings with stress on the plans, elevations, sections, and construction details. Interrelationship of design, working drawings and construction. Each student to produce at least one set of architectural working drawing for a project, which he/she designed in a previous semester. Coordination and checking of drawings (plans, elevations, sections, detail and services layouts). Teaching is by means of lectures, studio works, site visits.

Course Code: ARCG 413 **Course Title:** Contracts & Implementations of Documents

Introduction to the concepts of project, project management, project delivery and project life-cycle. Context and life-cycle of building projects extending from planning to tendering and construction phases. Different ways of selecting a contractor and making contracts in the tendering phase: Competition and negotiation, single stage and two-stage tendering, fixed price, cost reimbursement, target cost contracts etc. Analysis of the primary contract documents involved in the tendering phase: Construction drawings, specifications and bills of quantities. Overview of the various systems currently utilized in delivering (or procuring) building projects: General contracting, design and build, management contracting, construction management etc. Current laws and regulations governing construction tenders and contracts in Bahrain.

Course Code: ARCG 414 **Course Title:** Contemporary Architecture

Contemporary architectural movements. Various factors affecting the form of the present day built environments and urban developments. Study and analysis of various examples of contemporary architecture to enable the students to absorb the theoretical basis and concepts underlying the accomplishments and movements, with the aim of helping the student's to discover their personal orientations.

Course Code: ARCG 420 **Course Title:** Architectural Design VI

Architectural Design VI is an advanced level studio concerned with the design of multi-purpose buildings in urban context with particular emphasis on relating the existing features of the urban tissue with new building complexes by also taking local building regulations, codes and bylaws into account.

Course Code: ARCG 423 **Course Title:** Working Drawings II

Each student has to select 16 to 20 areas of his/her architectural working drawing which, was prepared for ARCG 412 Working Drawings I course. These areas to cover: external walls and internal partitions, balconies, staircases, roof, external and internal doors, windows, covered ways, canopies, external landscape features, ceiling, furniture and fittings. The student has to develop these items into a detailed working drawing where each area will be presented in one or more sheets. The course stresses on in depth details of each selected area with emphasis on innovation, practicality and functionality of the detail, selected materials, fixing and construction techniques. The teaching is by means of lectures, studio works, site visits.

Course Code: ARCG 510 **Course Title:** Architectural Design VII

Architectural Design VII is the last advanced level studio before Senior Projects where students are expected to demonstrate the knowledge and architectural design skills they have gained so far by working on highly complex design problems in different contexts and with equal emphasis on cultural, environmental, social and technical issues.

Course Code: ARCG 511 **Course Title:** Graduation Project I - Program Stage

Preparation of the architectural program for the graduation project which establishes its pertinent goals, user's needs and activities, and consequently design the spatial and other requirements which accommodate such users and their needs. The program takes into consideration all functional, human, technical, and environmental factors affecting the architectural design.

Course Code: ARCG 520 **Course Title:** Graduation Project II - Design Stage

The objective of this final design studio is to allow the student to express her/his own ideas, character, and architectural identity, through creative design for the project which was selected in the graduation project I.

Course Code: ARCG 521 **Course Title:** Architectural Professional Practice

Understanding of the building team: Client, designers, contracting team and the statuary authorities. Overview of the development of the Architectural profession from past to present both in Europe and in Islamic countries. The managerial aspects of Architectural practice today: Architect's registration, organizing an Architectural firm and individual design projects, various ways of obtaining projects, information retrieval for design etc. Current laws, regulations and building codes pertinent to Architectural and Engineering practice in Bahrain.

Course Code: ARCG 522 **Course Title:** Project Management

Further analysis of project management concepts: Project management knowledge areas and project management context. Fundamentals of project time management: activity definition, activity sequencing, activity duration estimation, schedule development, schedule control. Fundamentals of project cost management: resource planning, cost estimating, cost budgeting, cost control. Manual and computer aided project management lab exercises regarding the time and cost management of small building projects: making work breakdown, planning resources, estimating costs (bills of quantities), determining the critical path, leveling resources etc.

Course Code: ARCG 328 **Course Title:** Interior Design for Architects

History background of interior design, ancient, classic neoclassic and contemporary styles. Space arrangements, circulatory patterns, walls, partitions, ceilings and openings, finishing materials, light, color texture, furniture design and arrangement, indoor planting. The format includes lectures, slides demonstration and studio exercises covering static and dynamic areas.

Course Code: ARCG 329 **Course Title:** Computer Animations

Introducing the basics and concepts of animation. Implementation of computer animation techniques in architecture and urban design projects thorough standard programs. Employing advanced visualization and walk-through principles in the design process and representation. Introduction to the Virtual Reality concepts and environments, and proceeding to create 4D and VR models of design projects.

Course Code: ARCG 330 **Course Title:** Advanced Building Technologies
Analysis of advanced technologies in building construction to include site works, plant and equipment. Classification and review of contemporary materials and methods used in manufacturing building components and in their assembly on site. Major building production trends with regard to different production location and techniques such as; system building, component approach, building with modules and unconventional cast-in-situ techniques. Integration of building systems in design.

Course Code: ARCG 331 **Course Title:** Special Topics in Architecture
open

Course Code: ARCG 424 **Course Title:** Landscape Architecture
History and applications of the process of landscape architecture through studying the relevant vocabulary, the topographic features of a site and the various ways of shaping and grading such sites and the technology and method involved. Attention is paid to the local environment and natural resources of the site, the local and regional vegetation and various ways of looking after it, and the way all these aspects influence both public health and preservation of natural resources.

Course Code: ARCG 426 **Course Title:** Advanced Topics in Computer Applications.
Introducing the basics and concepts of animation. Implementation of computer animation techniques in architecture and urban design projects thorough standard programs. Employing advanced visualization and walk-through principles in the design process and representation. Introduction to the Virtual Reality concepts and environments, and proceeding to create 4D and VR models of design projects.

Course Code: ARCG 427 **Course Title:** Research Methods In Architecture.
Research processes in architecture. A review of research strategies, designs and settings. An exploration of research methods as related to programming, design and evaluation; experimental approaches, sampling procedures, analysis of documents and observations, questionnaires, interviews, as well as the processing, analysis and interpretation of data and presentation of findings. Several case studies from the local environment will be examined, enabling students to obtain first-hand experience in research development, administration and analysis.

Course Code: ARCG 555 **Course Title:** Energy Conservation in Buildings
Green building design strategies, Energy needs and energy requirements in buildings. Climatic design and the use of Bio-climatic Chart for designing energy efficient buildings in tropical regions with special reference to Bahrain. The use of renewable energies in buildings. Computer simulation programs for the analysis and studies of energy use in buildings.

Course Code: ARCG 557 **Course Title:** Conservation of Buildings
Introduction to Architectural Conservation and its Concepts. Terminologies in Conservation (Monument, Restoration, Preservation), Heritage theory and its practice to focus especially on how preservation theories and experimental practices helped to redefine and advance new conceptions of architecture, cities and landscapes. Documentation and recording of heritage buildings, Conservation process, analysis and design. Constructive conservation and adaptive re-use in the context of Bahrain. Phases Involved in Restoration of Single Monuments, International Organizations, International charters and legislation, World Heritage Sites in Bahrain.

Course Code: ARCG 559 **Course Title:** Behavioral Factors In Architecture
This course offers an introduction to the social and psychological aspects of architecture and to environment-behaviour research, & environmental psychology fields. It introduces the internal processes that generate human behavior, and the external processes that influence it. The course discusses theories of environmental perception and cognition, privacy, territoriality, personal space, imageability, identity & culture. It is aimed to construct a link to architecture as 'place-making' through the theories of 'psychology of place'. The course intends to inculcate an approach to architecture based on environment-behaviour research in creating meaningful forms and places.

Course Code: ARCG 556 **Course Title:** Special Topics in Advanced Studies in Architecture
Open

Course Code: ARCG 399 **Course Title:** Architectural Training
This course exposes the students to the real world to gain practical experience in working in a professional practice

College Requirement Courses Descriptions

Course Code: ENGL 101 **Course Title:** Communication Skills I
This course focuses on reading skills and strategies and language development. The reading section concentrates on high-interest contemporary topics and encourages students to increase speed and efficiency. The writing component, integrated to the reading materials, reviews grammatical structures, develops language accuracy and introduces paragraph writing. Students are required to upgrade their grammar, reading, and listening skills on the internet.

Course Code: ENGL 102 **Course Title:** Composition and Reading II
A continuation of English 101 which further develops the students' skills in reading and writing. The course exposes students to wider range of reading material aimed at developing their understanding of different styles of English.

Course Code: MATHS 101 **Course Title:** Calculus I
Algebra. Functions and graphs. Trigonometry. Conic sections. Limits and continuity. Derivatives and integrals. Applications of derivatives which include mean value theorem, extrema of functions and optimization. Definite integrals and the Fundamental Theorem of Calculus.

Course Code: MATHS 102 **Course Title:** Calculus II
Applications of definite integrals, including areas, volumes and surface areas of solids of revolution, arc length and centroids. Transcendental functions, indeterminate form and L'Hopital's Rule. Techniques of integration and improper integrals. Infinite series, power series. Maclaurin and Taylor Theorem.

University Requirements Courses Descriptions

Course Code: ARAB 110 **Course Title:** Arabic Language Skills
This course focuses on basic Arabic skills including form, function, and meaning. It also helps the student to appreciate and understand structures and approach them from a critical point of view, through various genres in literature.

Course Code: HIST 122 **Course Title:** Modern History of Bahrain and Citizenship
Spatial identity of Bahrain: Brief history of Bahrain until the 18th century; the historical roots of the formation of the national identity of Bahrain since the 18th century; the modern state and evolution of constitutional life in Bahrain; the Arabic and Islamic dimensions of the identity of Bahrain; the core values of Bahrain's society and citizenship rights (legal, political, civil and economic); duties; responsibilities and community participation; economic change and development in Bahrain; Bahrain's Gulf, Arab and international relations.

Course Code: HRLC 107 **Course Title:** Human Rights
This course deals with the principles of human rights in terms of the definition of human rights, scope, sources with a focus on the International Bill of Human Rights; The Charter of the United Nations; Universal Declaration of Human Rights; The International Covenant on Economics, Social and Culture rights; Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment; Mechanics and the Constitutional Protection of Rights and Public Freedoms in Kingdom of Bahrain.

Course Code: ISLM 101 **Course Title:** Islamic Culture
An introduction to the general outline and principles of Islamic culture, its general characteristics, its relationships with other cultures, general principles of Islam in beliefs, worship, legislation and ethics.