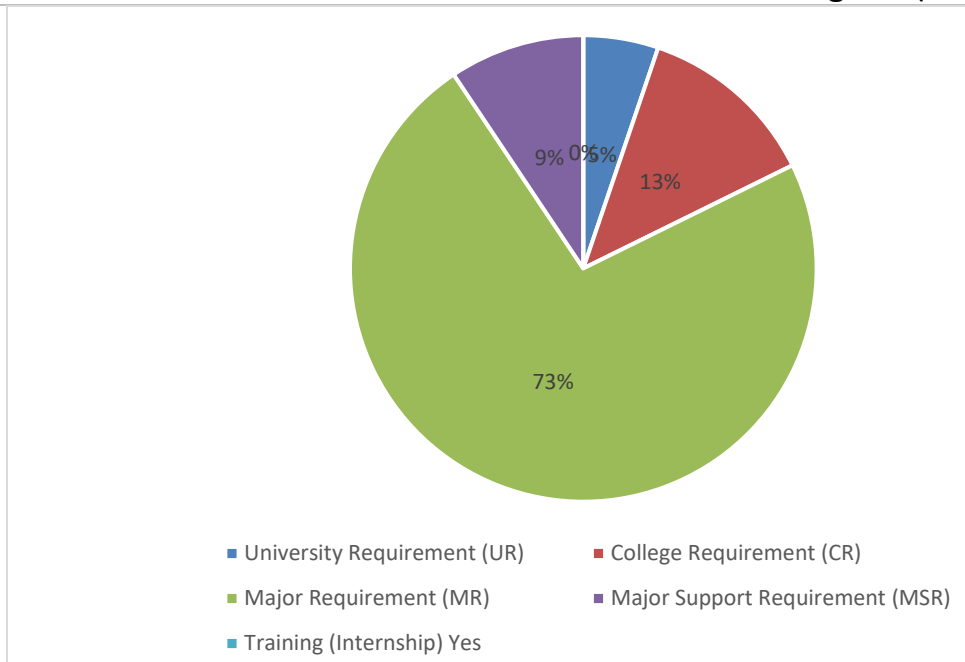
Associate Diploma in Architecture

An Exit Qualification from the Bachelor of Architecture Program

for Students Admitted to the Bachelor of Architecture Program (2014-2023)



University Requirement (UR)	**5**
College Requirement (CR)	**12**
Major Requirement (MR)	**70**
Major Support Requirement (MSR)	**9**
Training (Internship) **Yes**	**0**
Total Credit (CRD)	**96**

Teaching Language: English

University Requirements

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARAB 110, or HIST 122, or ISLM 101	Arabic Language Skills Modern History of Bahrain and Citizenship Islamic Culture	3	0	3	UR	------	No
HRLC 107	Human Rights	2	0	2	UR	------	No

College Requirements

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ENGL 101	Communication Skills I	3	0	3	CR	------	No
ENGL 102	Composition and Reading II	3	0	3	CR	ENGL 101	No
MATHS 101	Calculus I	3	0	3	CR	------	No
MATHS 102	Calculus II	3	0	3	CR	MATHS 101	No

Major Support Requirements

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
PHYSC 107	Physics for Building Design	3	0	3	MSR	--	NO
CEG 210	Structural Systems I	3	0	3	MSR	MATHS 102, ARCG 120	NO
CEG 220	Structural Systems II	3	0	3	MSR	CEG 210, ARCG 210	NO

Major Requirements

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
ARCG 120	Basic Design II	0	6	3	MR	ARCG 110	YES
ARCG 121	Architectural Graphics II	0	6	3	MR	ARCG 111	YES
ARCG 210	Architectural Design I	0	10	5	MR	ARCG 120 & 121	YES
ARCG 211	Architecture History I	2	0	2	MR	ARCG 120	YES
ARCG 213	Architectural Construction I	1	2	2	MR	ARCG 120/121	YES
ARCG 215	Computer Aided Architectural Design I	1	4	3	MR	ARCG 121	YES
ARCG 216	Environmental Systems I	2	2	3	MR	PHYCS 107	YES
ARCG 220	Architectural Design II	0	10	5	MR	ARCG 210	YES
ARCG 221	Architectural History 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	1	4	3	MR	ARCG 121	YES
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 317	Urban Design	1	2	2	MR	ARCG 220	YES
ARCG 325	Housing	2	0	2	MR	ARCG 317	YES

ARCG 327	Building Service Systems	2	2	3	MR	ARCG 313	YES
ARCG 329	Computer Animations	3	0	3	ME	ARCG 310	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

Industrial Training

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ARCG 291	Industrial Training I	0	0	0	MR-Training	Completion of 45 credits	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 colour, 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: 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 thermos-physical properties of building materials.

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: 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 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 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 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 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 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 lifecycle 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.

Course Code: ARCG 291 **Course Title:** Industrial Training I

In this training course, all students in the program must participate in an approved training program in the relevant industry. At the completion of 300 hours of supervised training, each student must submit a formal report and conduct an oral presentation.

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.

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 a 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.

Major Support Courses Descriptions

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: 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: 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 shell