Bachelor of Architecture (B.Arch.) Summary of Degree Requirements

Course Classification	Credit Hours Required
Foundation	19
Design Core	93
Professional Electives	12
Arts and Sciences Core	36
General Electives	6
Total	**166***

** The B.Arch. normally requires five years to complete.*

Students wishing to pursue the Entrepreneurship and Innovation Path, should take (1) BUSI 121, *Entrepreneurship and Innovation* as one of their General Electives requirement; (2) BUSI 251, *Startup Entrepreneurship Project* as one of their Professional Electives and (3) Run a Startup as their ARCH 561, *Internship for Architecture.* Please see pp. 164-165 of the *Undergraduate Catalog* for information related to the Center of Entrepreneurship and Innovation.

Curriculum/Courses

Foundation		Credit Hours
ARCH 101	Architectural Design Studio I	4
ARCH 102	Architectural Design Studio II	4
ARCH 151	History and Theory of Architecture I	3
MATH 105*	Precalculus for Architecture	4
PHYS 201	Introductory Physics I, w/Lab	4
Total Foundation Requirements		**19**

**Students who are exempted from MATH 105 should replace it with IDES 191 (Interior Design Studio I: Visual Expression and Composition).*

Design Core		Credit Hours
ARCH 201	Architectural Design Studio III	6
ARCH 202	Architectural Design Studio IV	6
ARCH 211	Materials and Methods of Construction	3
ARCH 252	History and Theory of Architecture II	3
ARCH 253	History and Theory of Architecture III	3
ARCH 301	Architectural Design Studio V	6
ARCH 302	Architectural Design Studio VI	6
ARCH 311	Structural Analysis	3
ARCH 312	Structural Design	3
ARCH 321	Environmental and Building Service Systems	3
ARCH 351	Theory of Architecture	3
ARCH 401	Architectural Design Studio VII	6
ARCH 402	Architectural Design Studio VIII	6
ARCH 412	Construction Management and Building Economics	3
ARCH 441	Professional Practice and Ethics	3
ARCH 431	Life Safety and Codes	3
ARCH 501	Architectural Design Studio IX	6
ARCH 502	Architectural Design Studio X	6
ARCH 561	Internship	3
DDFT 268	Computer-Aided Design (CAD) I	3
DDFT 341	Digital Design and Fabrication	3
DDFT 474	Building Information Modeling (BIM) I	3
DDFT 475	Building Information Modeling (BIM) II	3
Total Design Core Requirements		**93**

Professional Electives		Credit Hours
ARCH 294	Film and Architecture	3
ARCH 322	Basic Elements of Landscape Architectural Design	3
ARCH 342	Portfolio Design in Architecture	3
ARCH 361	Interdisciplines in Architecture: Archeatable	3
ARCH 370-375	Architecture Study Tour	3
ARCH 380	Special Topics in Architecture	3
ARCH 423	Sustainable Urbanism	3
DDFT 270	Digital Design Illustration	3
DDFT 351	Introduction to Parametric Design	3
DDFT 352	Intermediate Parametric Design	3
DDFT 466	Advanced Computer-Aided Design (CAD)	3
DDFT 473	Virtual Environments	3
IDES 280	Three-Dimensional Design	3
IDES 374	Hospitality Design	3
Total Professional Electives Requirement		**12**

Arts and Sciences Core

See pp. 102-104 of the *Undergraduate Catalog* for Arts and Sciences Core Requirements.

Note that all degree candidates in Architecture must take MATH 205 (Calculus for Architecture) to fulfill the Core Requirement in Mathematics.

Total Arts and Sciences Core Requirements **36**

General Electives **6**

TOTAL B.ARCH. DEGREE REQUIREMENTS 166

B.Arch. Course Sequencing

All candidates for the B.Arch. degree should adhere to the following course sequencing:

	Fall	Spring
Year I	ARCH 101 ARCH 151 ENGL 101 MATH 105 UNIV 100	ARCH 102 COMP 101 ENGL 102 MATH 205 SCIE ELE
Year II	ARCH 201 ARCH 211 ARCH 252 DDFT 268 ENGL 103	ARCH 202 ARCH 253 PHYS 201 PSPK 101 HUMN ELE
Year III	ARCH 301 ARCH 311 ARCH 351 DDFT 341 WLDC 201	ARCH 302 ARCH 312 ARCH 321 DDFT 474 WLDC 202
Year IV	ARCH 401 ARCH 412 ARCH 431 DDFT 475 ISST ELE	ARCH 402 ARCH 441 GEN ELE SSCI ELE PROF ELE
Year V	ARCH 501 ARCH 561 PROF ELE PROF ELE	ARCH 502 PROF ELE GEN ELE

Legend:

ELE: Elective
GEN: General
HUMN: Humanities
ISST: Islamic Cultural Studies
PROF: Professional
SCIE: Science
SSCI: Social Sciences

Minor in Architecture

The minor in Architecture is open to all students except those majoring in Architecture. This minor allows students to develop knowledge in the areas of theory and history of Architecture, construction and building materials, and architectural design. Up to two courses from a student's General Electives may be counted towards fulfilling the requirements for the minor in Architecture. In addition to university-wide degree requirements, students must satisfy prerequisites as per the *Catalog* and complete the following courses:

Requirements		Credit Hours
ARCH 102	Architectural Design Studio II	4
ARCH 151	History and Theory of Architecture I	3
ARCH 201	Architectural Design Studio III	6
ARCH 211	Materials and Methods of Construction	3
Total Minor Requirements		**16**

Course Descriptions

ARCH 101 | ARCHITECTURAL DESIGN STUDIO I (0-8-4)

F, and upon demand

In this foundation course, the student is introduced to the fundamentals of manual drafting and the tools used in this technique. Students will learn basic interior drafting vocabulary, line quality, lettering and drafting conventions for a site, plot, roof and floor plan, interior and exterior elevations, and building sections. This course involves presentation techniques axonometric and perspective drawings. Anthropometrics and ergonomics will also be introduced.

ARCH 102 | ARCHITECTURAL DESIGN STUDIO II (0-8-4)

Prerequisite: ARCH 101 | S, and upon demand

ARCH 102 builds upon the foundation skills acquired in ARCH 101. The students recognize fundamental concepts and basic architecture elements. In this course students discuss design process that includes the role of research, analysis, and spatial organization. Also, students work individually on a number of projects that introduce them to different phases including research, conception, problem formulation and resolution and project layout and presentation. In addition, students work in teams on design projects concentrating on analysis and decision making.

ARCH 151 | HISTORY AND THEORY OF ARCHITECTURE I (3-0-3)

F, and upon demand

This is the first of three sequential courses that cover the History of Architecture from the third millennium BC through to the Twenty-first century. This course is characterized by a series of lectures and presentations that examine the development of architecture and urbanism from the ancient world through to the late medieval period. Knowledge of the language of architecture, its terminology and recognition of period styles are required. Emphasis is placed on the historical and intellectual context of selective examples of architecture, along with their environmental, technological and social relevance.

ARCH 201 | ARCHITECTURAL DESIGN STUDIO III (0-12-6)

Prerequisite: ARCH 102 | F, and upon demand

This second-year studio course focuses upon the understanding of architectural convention in relation to cultural, sociological and general human related aspects. Based on a socio-cultural understanding of design approach students are encouraged to develop their analytical problem-solving skills which function as the basis for design invention and as the foundation of ethical action in the process of architectural designing.

ARCH 202 | ARCHITECTURAL DESIGN STUDIO IV (0-12-6)

Prerequisites: ARCH 201, ARCH 211 | S, and upon demand

This is a studio course that introduces the strategies of architectural design. Students develop an architectural project based on a building program and site. Issues concerning building assemblies, structural systems, building envelope systems, and basic building systems are covered. The integration of these issues into building design is complemented by studio exercises.

ARCH 211 | MATERIALS AND METHODS OF CONSTRUCTION (3-0-3)

Prerequisite: ARCH 101 | F, and upon demand

This course introduces students to the role of architectural technology in the design process. Building materials and methods of construction are studied. Students become aware of the appropriate application and performance of construction materials, components, and assemblies. Students acquire the knowledge to make competent choices with regards to building materials and assembly techniques.

ARCH 252 | HISTORY AND THEORY OF ARCHITECTURE II (3-0-3)

Prerequisite: ARCH 151 | F, and upon demand

This is the second of three sequential courses that cover the History of Architecture from the third millennium BC through the Twenty-first century. This course is characterized by a series of lectures and presentations that examine the development of architecture and urbanism in Europe and elsewhere from the late medieval period through the Renaissance until the late eighteenth century. Knowledge of the language of architecture, its terminology and recognition of period styles are required. Emphasis is placed on the historical and intellectual context of selective examples of architecture, along with their environmental, technological and social relevance.

ARCH 253 | HISTORY AND THEORY OF ARCHITECTURE III (3-0-3)
Prerequisite: ARCH 252 | S, and upon demand

This is the third of three sequential courses that cover the History of Architecture from the third millennium BC through to the Twenty-first century. This course is characterized by a series of lectures and presentations that examine the development of architecture and urbanism in Europe and elsewhere from the industrial revolution through to the early Modernism period of Europe and North America and on to a world setting for the variations in late Modernism before considering various new movements of the Twenty-first century. Knowledge of the language of architecture, its terminology and recognition of period styles are required. Emphasis is placed on the historical and intellectual context of selective examples of architecture, along with their environmental, technological and social relevance.

ARCH 294 | FILM AND ARCHITECTURE (3-0-3)
Prerequisite: ARCH 202 | Upon demand

The course film and architecture will introduce students to tools for analysis and exploration of the relation between architecture and film both as phenomena of time and space. Students will look at the source and portrayal of architectural expression in film from its development of early to modern manifestation. This course enhances the theoretical and experimental understanding of filmic and architectural structure.

ARCH 301 | ARCHITECTURAL DESIGN STUDIO V (0-12-6)
Prerequisite: ARCH 202, Corequisite ARCH 351 | F, and upon demand

This third year studio course focuses upon the understanding of Architectural theories and methodologies, their implication on understanding and approaching design methods. Students are encouraged to develop new ways of analysis and criticism for architectural objects. This will be the basis for the process of design invention of this course.

ARCH 302 | ARCHITECTURAL DESIGN STUDIO VI (0-12-6)
Prerequisites: ARCH 301, Corequisite ARCH 321 | S, and upon demand

While the first and second-year Architectural Design Studios I through V introduces students to design basics, principles, theory, methods and structure-related issues, this studio course starts to focus and examine the impact of environmental issues with the aim to design an environmentally responsive building within the design process.

ARCH 311 | STRUCTURAL ANALYSIS (3-0-3)
Prerequisite: ARCH 211, PHYS 201 | F, and upon demand

This course explains the relationship between architectural and structural design. Students will study the behavior of structures through an understanding of the concepts of load and load path, internal forces, different types of stress, structural materials, the role of geometry in structural design and finally basic mathematical calculations.

ARCH 312 | STRUCTURAL DESIGN (3-0-3)
Prerequisite: ARCH 311 | S, and upon demand

This course prepares students for understanding the impact of structural systems on architectural design and for making selections based on the necessary knowledge of aspects of structure. The course covers the relevant structural materials and properties, structural elements and systems.

ARCH 321 | ENVIRONMENTAL AND BUILDING SERVICE SYSTEMS (3-0-3)
Prerequisite: ARCH 102 | S, and upon demand

This course exposes the students to the notion of sustainability and the way it informs architecture and site design thinking. Students understand how environmental systems can reduce the energy consumption related to heating, cooling, daylighting, ventilation and acoustics. Students also learn about building services, including Mechanical, Electrical and Plumbing (MEP) as well as vertical transportation within the building.

ARCH 322 | BASIC ELEMENTS OF LANDSCAPE ARCHITECTURAL DESIGN (3-0-3)
Prerequisite: ARCH 202 | S, and upon demand

This course presents the thoughts and key design theories fundamental to landscape architecture in simple words and illustrations, it also offers the vocabulary, significance, characteristics, potential uses, and design guidelines for landform, plant materials, buildings, pavement, site structures, and water in landscape architectural design. It will help students overcome common mistakes and misconceptions typical in the early phases of their design career and will heighten their understanding and awareness of the major physical components of the outdoor environment.

ARCH 342 | PORTFOLIO DESIGN IN ARCHITECTURE (3-0-3)
Prerequisite: ARCH 302 | Upon demand
This course introduces students to how to plan, design, and produce their portfolio from their design projects, which contain sources for their conception and a trajectory for their design development. It will also explain how to search for clues to your core design inspiration and discuss how to be more open to new pathways to problem analysis and problem-solving inspiration. Finally students can apply digital desktop publishing and image processing software techniques to produce more not only competitive but also professionally informed.

ARCH 351 | THEORY OF ARCHITECTURE (3-0-3)
Prerequisites: ARCH 202, ARCH 253 | F, and upon demand
This advanced lecture course focuses upon the understanding of architectural theories and methodologies, and their implication on understanding and analyzing architectural design. Students are encouraged to develop new ways of analysis and criticism for architectural objects as well as to reformulate ideas and theories.

ARCH 361 | INTERDISCIPLINES IN ARCHITECTURE: ARCHEATABLE (1-4-3)
Prerequisite: DDFT 341 | F, and upon demand
This is an advanced course on Digital Design and Fabrication focused on Gourmet Pastry. The course explores the intersection between Architecture and Pastry.

ARCH 370-375 | ARCHITECTURE STUDY TOUR (3)
Prerequisite: ARCH 302 | Upon demand
In this course, students analyze specific aspects in architecture and/or urban design in global context, through direct analysis of actual case studies, or by participation in relevant worldwide events and exhibitions.

ARCH 380 | SPECIAL TOPICS IN ARCHITECTURE (3-0-3)
Prerequisite: ARCH 202 | F, and upon demand
This is an advanced course in which students participate in topics to be selected by the instructor, with the approval of the Chair, and which develops an aspect of design and/or presentation. Research, critical analysis, application of the research and analysis to the design, and presentation will be required in the course.

ARCH 401 | ARCHITECTURAL DESIGN STUDIO VII (0-12-6)
Prerequisite: ARCH 302 | F, and upon demand
In this course, students survey the main theories of urban design by analyzing several case studies throughout recent history. They also discuss the multidimensional and interactive aspect of urban design and its relation to architecture, and design a real context urban project in order to integrate the physical, environment, socio-cultural, economic, legal and philosophical elements that shape cities.

ARCH 402 | ARCHITECTURAL DESIGN STUDIO VIII (0-12-6)
Prerequisite: ARCH 321, ARCH 401, ARCH 431, DDFT 475 | S, and upon demand
In this design studio students are not only required to consolidate their knowledge and abilities developed under previous studios, but should also demonstrate well rounded competencies in integrating the technical aspects of architectural design, with particular emphasis given to construction materials and technology, structural design, Mechanical, Electrical & Plumbing (MEP) solutions and working drawings documentation.

ARCH 412 | CONSTRUCTION MANAGEMENT AND BUILDING ECONOMICS (3-0-3)
Prerequisite: ARCH 211 | F, and upon demand
ARCH 412 introduces students to the basic principles and techniques of management and Building Economics. Students are introduced to the principles and practices of estimating project cost, scheduling methods, and controlling techniques, as well as time value of money, financial feasibility and cash flow analyses.

ARCH 423 | SUSTAINABLE URBANISM (3-0-3)
Prerequisites: ARCH 202, ARCH 321 | S, and upon demand
This course combines expertise in New Urbanism with a thorough understanding of environmental issues and techniques. It also exposes students to a comprehensive and technically informed way on how to design and build places that are environmentally responsible and also gratifying to inhabit.

ARCH 431 | LIFE SAFETY AND CODES (3-0-3)

Prerequisite: ARCH 202| F, and upon demand

This course covers the process of an architectural project starting from the inception stages. Topics include programming, developing design requirements and standards, as well as building codes, including those incumbent to safety and accessibility.

ARCH 441 | PROFESSIONAL PRACTICE AND ETHICS (3-0-3)

Prerequisites: ARCH 431 | S, and upon demand

In this course, students will develop an understanding of the business and practice of Architecture. Topics covered include professional services and contracts, firm leadership, strategic planning, team building and staff development, standards of professional, legal and ethical conduct, marketing, firm and project financial management, risk and liability, construction administration, and dispute resolution.

ARCH 501 | ARCHITECTURAL DESIGN STUDIO IX (0-12-6)

Prerequisite: ARCH 402 | F, and upon demand

In this course, students prepare a thesis proposal which consists of collecting, analyzing, and writing a summary about data pertinent to a particular building type and use it to produce a preliminary design to be carried out in detail during the final semester. Students will build a comprehensive knowledge as to building standards and norms leading to space programming, codes, and regulations and design theory. Throughout the process, students will learn to plan, structure and write a research document as well as developing familiarity with research techniques and methods in the field of Architecture.

ARCH 502 | ARCHITECTURAL DESIGN STUDIO X (0-12-6)

Prerequisites: ARCH 431, ARCH 501 | S, and upon demand

This is a capstone course in which students implement their thesis research by developing a project that incorporates all the principles of design demonstrating a comprehensive understanding of architectural design and evidence of professional capability. A final presentation of the resulting design to an advisory panel will be required.

ARCH 561 | INTERNSHIP (0-15-3)

Prerequisite: Senior Status and approval of the Chair | F, S, and upon demand

The internship provides students with practical, on-the-job experience which allow them to integrate theory with "real world" situations. The internship is academically supervised by a faculty member and professionally supervised by the company's internship supervisor who provides feedback to the university about the student's progress.

DDFT 268 | COMPUTER-AIDED DESIGN (CAD) I (1-4-3)

Prerequisites: ARCH 101 or IDES 192, ENGL 101 | F, SI, and Upon demand

In this course, the student is introduced to the fundamentals of CADD which stands for computer aided design and drafting and the tools used in this form of practice. Students learn 2D and 3D CADD vocabulary and the technical skills necessary to produce floor plans, furniture plans, exterior and interior elevations, building sections, and reflected ceiling plan. Students are also required to set up custom CADD standards and make use of CADD automation tools. A basic CADD 3D modeling component is also introduced at the end of the semester.

DDFT 270 | DIGITAL DESIGN ILLUSTRATION (1-4-3)

Prerequisites: DDFT 268 | S, and Upon demand

The subject focus for this course is the language of architectural exterior and interior design illustrations. Emphasis is on the tools necessary to create skillful enhancement of CAD drawings and turn them into digitally manipulated images which include entourage. Students are required to draft 2D floor plans, elevations, sections and 3D mass model an existing building for the sole purpose of generating accurate shadows. These are then used as backgrounds for applying specific drawing type rendering techniques. The importance of appropriate color, texture, scale, tone, light and typography is stressed in the various stages of production. The end product is a combination of rendered images and text thoughtfully laid out to represent and communicate an idea.

DDFT 341 | DIGITAL DESIGN AND FABRICATION (1-4-3)
Prerequisite: ARCH 202 or IDES 292 | F and Upon demand
This course provides both the conceptual framework and the practical skills for understanding digital design media and for making effective use of the emerging digital design and fabrication repertoire. Topics include basics of computation, uses of spatial and image data, fundamentals of geometric modeling and fabrication, and cultural aspects of design computing.

DDFT 351 | INTRODUCTION TO PARAMETRIC DESIGN (1-4-3)
Prerequisite: DDFT 341 | F, S and Upon demand
Parametric Design provides both the conceptual framework and the practical skills for understanding computational design and teaching students the basic skills in visual scripting. Topics include basics computation, uses of spatial and image data, fundamentals of geometric modeling and fabrication, and cultural aspects of design computing.

DDFT 352 | INTERMEDIATE PARAMETRIC DESIGN (1-4-3)
Prerequisite: DDFT 351 | F, S, SI
Intermediate Parametric Design brings students into complex concepts of object oriented programming, building upon skills learned in DDFT351. Topics include transformations, physics and structures, evolutionary computation, management and visualization of data flows, scripting for prototyping and digital fabrication, and grasshopper interoperability.

DDFT 433 | DESIGN PROCESS: CAD AND CAM (1-4-3)
Prerequisite: DDFT 268 | F, and Upon demand
This course provides both the conceptual framework and the practical skills for understanding tools for product development that combines industrial and mechanical design, collaboration, and machining in a single software. Students explore design ideas with an integrated concept-to-production platform, as well as develop an application-based understanding established on the design process to be applied to interior design spaces.

DDFT 466 | ADVANCED COMPUTER-AIDED DESIGN (1-4-3)
Prerequisite: DDFT 268 | F, S, and Upon demand
This is an advanced computer aided drafting course focused on three-dimensional modeling and animation. Students learn how to translate two-dimensional plans and elevations into three-dimensional drawings to investigate, analyze, develop and improve design solutions and to create design presentations. This is a project-oriented course and each student will apply these simulation techniques to investigate and refine a previously designed hospitality or other approved project. Students are required to generate fully rendered photorealistic perspectives.

DDFT 473 | VIRTUAL ENVIRONMENTS (1-4-3)
Prerequisite: DDFT 268 | Upon demand
This advanced course introduces students to the principles of Virtual Reality modeling methods. Students will acquire passive and active learning techniques that allow them to 3D design while they are in Virtual Reality.

DDFT 474 | BUILDING INFORMATION MODELING I (1-4-3)
Prerequisite: DDFT 268 | F, S, and Upon demand
In this advanced course, the student is introduced to the principles of BIM which stands for Building Information Modeling. AKA "Virtual Building" or "Intelligent Building Simulation" BIM is 3D, 4D, 5D, 6D and 7D. It is an integrated multi-dimensional database. Drawings, building views, calculations, quantity take offs, collision detection, energy efficiency analysis, structural analysis, construction scheduling, etc. are by-products of and automatically derived from BIM. It is a revolutionary technology that CAD is already quickly evolving into. It promises huge savings in cost and time as it integrates architecture, interior design, structure, MEP, construction, and operations for the entire lifecycle of a building. This BIM introductory course explores the implications of this evolving technology and covers BIM essential tools in application.

DDFT 475 | BUILDING INFORMATION MODELING II (1-4-3)
Prerequisite: DDFT 474 | F, SI and Upon demand
In this BIM II sequence course, students build on the principles and application essentials learned in BIM I. Students are required to focus on advanced custom architectural and furniture modeling as well as integrate the architecture and the interior design with the structural and the MEP systems. Advanced BIM application tools are introduced for students to exercise project collaboration and interference checking on all integrated building components.

IDES 280 | THREE-DIMENSIONAL DESIGN (3-0-3)

Prerequisites: ARCH 102 or IDES 192 | S, and Upon demand

This is an elective course in which students study three dimensional form and space using appropriate tools and materials. A three-dimensional sensibility is developed through the use of research, analysis and study models. The conventions of plan, elevation and section are utilized to construct a furnished scale model of a project incorporating interior elements and finishes.

IDES 374 | HOSPITALITY DESIGN (3-0-3)

Prerequisite: ARCH 202 or IDES 391 | S, and Upon demand

This course introduces hospitality design. Students are introduced to the hospitality industry through comparative and client analysis. A hospitality interior design project is produced, applying anthropometric theory, sustainability and hospitality codes/standards.