Isra University-Engineering Faculty
Description for Compulsory and Elective Courses for Department of Architectural Engineering 2019/2020

04013310 Engineering Training: (6 Cr.Hrs, prerequisite: After (90) Cr.Hrs)
The engineering training consists of (320) actual working hours. The training is connected and at once.

04011163 Architectural Drawing :(2Cr. Hrs Prerequisite: None)
This course is concerned with the architectural drawing techniques, practice of different presentation methods, types of lines used in Architectural drawing, in addition to geometrical and descriptive projections, 3D. Drawings (isometrics, axonometric), basic geometric drawing, in addition to architectural lettering.

04011263 Shades and Perspective :(2Cr. Hrs Prerequisite: 04011163)
Introducing drawing techniques required for architectural representation of 3D objects, through perspective drawings, and the projection of shades and shadows on 2D and 3D architectural drawings.

04011162 Free Hand Drawing (1):(2Cr. Hrs Prerequisite: None)
Teaching drawing technique without using drafting tools, with the use of pencil, to present plans, forms, compositions of different forms in addition to studying and drawing of perspectives.

04011262 Free Hand Drawing (2) :(2Cr. Hrs Prerequisite: 04011162)
Presentation of architectural spaces and perspective drawings, projection of shades shadows using ink and colors, study of different architectural compositions and their relationships with light in addition to their representation in space, using all the techniques in creating architectural compositions in design.

04011164 Photography :(1Cr. Hr Prerequisite: None)
Basic principles of photography techniques, types of different photography methods, studying and documentation of architectural compositions by the use of photos.

04011151 Architectural Design (1-A):(2Cr. Hrs Prerequisite: None)
The studying of basic principles of architectural design through 2D practical applications by which different visual compositions could be created in space, studying the movement and visual colors, and the visual training for different colors and materials and model building.

04011251 Architectural Design (1-B):(2Cr. Hrs Prerequisite: 04011151)
Practical and theoretical study of 3D forms main composition and the method of placing them in space, architectural composition, practicing and creating their Architectural identity in space,

construction and methods of application in design, the design of two projects like kiosks and pergolas etc., for the development of the students visual perception through the design of applicable building in order to train students to better understand their environment and culture.

04012265 Presentation Techniques:(2Cr. Hrs Prerequisite: 04011262)
Students practice different means for architectural presentation, using; pencil, ink, (Graphic), watercolor, etc, of facilities for drawings and models makes.

04012162 Computer Aided Design (1):(2Cr. Hrs Prerequisite: 04011263)
This course is concerned with an introduction to the general use of computers and file management. It covers 2D drawing using several graphics software programs to enable students to execute various 2D architectural drawings

04012151 Architectural Design (2-A):(4Cr. Hrs Prerequisite:04011251)
This course is the beginning of the evolution from basic principles of design to the Architect design. This takes place through designing actual and specific projects in
place of ordinary and absolute formation. Thus it deals with a design of building which have a direct relation with actual life experience of the students such as residential, educational building direct services and their use as recreational & sports building, bank branches, post office branches. This is because of the easy comprehension of studying of the component elements of the building the building the natural relation between the buildings as well as the ways of administration methods used in service building. This will help the student understand the object to be attained by the design, through matching if possible to take advantage of the use of this very function of the buildings.

04012251 Architectural Design (2-B):(4Cr. Hrs Prerequisite: 04012151)
Design buildings that have a relation with the project technical, structural, and functional responsibilities or services such as Clinics, Maternity, Police, Commercial buildings (Shopping center); the student must undertake program & site studies and implement the laws of local planning and the frame of regulations that govern private buildings in his design project. Thus acquainting the student with the bylaws and regulations related to professional practice.

0401255 Basics of Architectural Design:(3Cr. Hrs Prerequisite: 04011251)
This course elaborates on combining architectural basics and concepts as a comprehensive system, adding to the previous creation and composing knowledge of the student a new perspective by introducing the requirements of human beings, their life and environment, in addition to the methods of interpretation into architectural entities.

04012124 Building Construction :(3Cr. Hrs Prerequisite: 04011163)
Introduction to Building construction understanding, forces effect the building and construction elements, study of natural and industrial build materials with the emphasis on local ones, foundations, methods for building and constructing bearing walls and constructions.
The study of components of construction elements; doors, windows, stairs, roofs, slabs, walls, columns and beams, providing methods of their construction, finishing, and the study of pre cast constructions.

04012113 History of Architecture (1):(3 Cr. Hrs Prerequisite: 04011251)
The study starts from the old architecture of ancient civilization such as; Nile valley, Mesopotamia, Latin America, and South East Asia, until the classical eras of Greeks and Romans, with indication to the various influences which affected the development of architectural thought and mode.

04012213 History of Architecture (2):(3 Cr. Hrs Prerequisite: 04012113)
A continuation of History of Architecture (1), it covers the development of architecture from the dawn of Christianity through the Byzantine period, the middle Ages, down to the Renaissance, Baroque and Rococo.

04013133 Physics Architecture (3 Cr. Hrs Prerequisite: 01102102)
This course highlights the impact of climate on the design process and deals with the buildings and humans. Accordingly, it requires the thermal balance of study of the methods of heat transfer through the buildings envelopes and interior architectural spaces as well,and thus the study of principles of basic physics that controls the phenomena of thermal transfer and its relation to the environment in which the users would feel comfortable. The course also addresses the basic principles of lighting and acoustics in relation to architectural spaces.

04012262 Computer Aided Design (2):(2Cr. Hrs Prerequisite: 04012162)
An extension to course Computer Aided Design (1). It concentrates on 3D computer drawings, handling surfaces, solids, material editing, lighting settings, backgrounds etc. It also deals with the utilization of other related programs.

04013264 Advanced Applications in Computer:(2Cr. Hrs Prerequisite: 04012261)
This course completes the principles the student studied in the courses (Computer Aided Design 1&2).
This course focuses on showing the 3-Dimentional perspectives by coloring or rendering by construction materials, and control on light and shadow, material and texture which is done by Computer Aided Design programs (AutoCAD 20014, 3D Max Photo Shop)

04013151Architectural Design (3-A):(4Cr. Hrs Prerequisite: 04012252)
The Introductory in this course continues the examination of the issues raised in precedent design and begins investigation of more complex issues related to building design and environmental context. Emphasis is placed on developing a systematic approach to architectural design while simultaneously dealing with the development of theory and intellectual inquiry.

04013251 Architectural Designs (3-B):(4Cr. Hrs Prerequisite: 04013151)
Continuation of Arch (04013151) projects more complex than the precedent course.

04012224 Working Drawing:(3Cr. Hrs Prerequisite: 04012124)
The study of working drawing concept and its importance on construction & contract process, enabling students to prepare all drawings & details to build an integrated building, by learning how to present their projects according to local building codes.

04013114 Islamic architecture: (3Cr.Hrs Prerequisite: 04012213)
It covers the successive historical periods of Islamic-Arab architecture since Mohammed the Messenger until the end of the golden era.It also discusses the theories and philosophical concepts that Islamic architecture depends on, and how these theories and concepts functionally could work at present.

04013112 Theories of Contemporary Architecture (1): (3Cr. Hrs Prerequisite:04012213)
This course concerns with the developments of architecture from the industrial revolution to the end of the Second World War in 1945. It particularly emphasizes on the social, Economics and political changes, and their effects on the modern architectural trends and pioneers.

04013115 Local Architecture and Heritage conservation
(3Cr. Hrs Prerequisite:04012213)
Review the definition of Vernacular architecture and heritage and the history of its conservation and its evolution. Analysis of the planning process for the protection of historic areas and sites within the urban form of cities as part of its management. The importance of including historic areas and sites within the master plan of the city as sustainable development approach. Interpretation of the correlation of historic events and the value of historic sites. The integration between historic sites and their local communities. Interpretation and presentation of historic areas for the public as a socio-economic development issue.

04014142 Town Planning (1):(2Cr. Hrs Prerequisite: 04013212)
A Historical background of urban development since the earlier civilization of Nile Valley and Mesopotamia take place, with reference to the influential factors on those developments. The planning discussions continue throughout the successive periods until the reaching to the theories and techniques applied in modern town planning, This course also defines the general meaning of the subject and levels of planning, i.e., national, regional and urban level, with a discussion to the socio-economic and physical factor, and their prime impact on the planning process.

04014242 Town Planning (2):(2Cr. Hrs Prerequisite: 04014142)
This subject will develop the students' ability to fix urban issues by analyzing local case studies through different stages such as: site analysis, the circulation and the atmosphere study…etc. The student will be able to come up with solutions that he finds suitable for the studied cases in order to avoid them when designing future projects. The solutions should be connected with the current status of the case study.

04014151 Architectural Design (4-A):(4Cr. Hrs Prerequisite: 04013251)
After the student has done several projects in the previous curriculum, at this stage he will be able to dig deep into the process of planning the design, fixing some major design issues that he

will eventually face and learn from it. He will be criticized when he does the function and the visual aspects based on the international standards of planning. Students will work on projects with larger scales such as neighboring residential or resorts.

04014251Architectural Designs (4 -B):(4Cr. Hrs Prerequisite: 04014151)
This subject will focus on the designing of a building or a mixed – use buildings within an urban environment and the development of a heritage place. The student will focus on the relation between the interior and the exterior and how to connect them perfectly and with harmony. He will focus on the visual, behavioral, functional side of the project.

04013212 Theories of Contemporary Architecture (2):(3Cr. Hrs Prerequisite: 04013112)
As an extension to course (1), it continues the academic study about thoughts, trends and movements, of modern Architecture since the end of the Second World War. Role of educational and technological changes is also considered.

04014184 Building Specifications & Profession Fundamental: (2Cr. Hrs Prerequisite: 04012124)
The principles of professional practice that determine the Architect's responsibilities practice and jobs and his relationships with concerned private and official parties in building construction principles of (private, design, consulting) administration, the estimate cost and CBM. In addition to quantity bills, specification of materials, different buildings, structural and non-structural elements, in accordance with the prepared working drawings, and included details

04014283 Construction Management (2Cr. Hrs Prerequisite: 04014184)
Principles of construction management , project phases, project life cycle, responsibities of project manager , project management team works planning and schechulling of project.

04015152 Graduation Project Thesis:(2Cr. Hrs. With 04015151+ pass in 120 cr.)
Creates data base, that any project for graduation depends on, by adapting scientific method's of clear architectural thought which enable the student to approach means for forming the project programs, thus to advance and finally obtains best alternative.

04015151 Architectural Design (5):(4Cr. Hrs Prerequisite: 04014251)
The design of buildings of investment type that cope with all building regulation and fulfill the rules and conditions of concerned institution (i.e. municipalities) these buildings would be selected in coordination with local consulting Architectural and engineering office.

04015251 Graduation Project:(4 Cr. Hrs Prerequisite: pass (04015151, 04015152)
After exacting assessment of the three alternatives, studied for each selected project in the previous term, students here are required to finals the best alternative, then develop it into a comprehensive one, taking in consideration the analytical data and factors which influence the project output.

04015251 Landscape Architecture:(3Cr. Hrs Prerequisite: 04014242)
This course comprises: Basic knowledge about landscape design with its general philosophical and specific functional concepts, the historical development part, the geometric and naturalistic form of design, principles of organization to achieve harmony, unity, Interest etc.. The students utilize different Techniques, including relative computer programs, to execute selected projects.

04013233 Sustainable Architecture:(3Cr. Hrs Prerequisite: 04013133)
This course will describe the basic concepts of sustainable and green building and explain the important factors for designing sustainable and greener environmental systems. Efficient use of energy, utilization of renewable energy systems, and sustainable management of intelligent buildings will be discussed.
Analytical techniques and computing tools for studying and assessing building energy and environmental performance will be explained.

04013245 Behavior in Architecture:(3Cr. Hrs Prerequisite: 04013112)
Introducing social and environmental human sciences, with emphasis on the Environment impact, as prime factor, on human behavior. Then the influence of the sociological and psychological output on architectural design. The perception and realization processes of the 2D & 3D forms. Finally, discussing sensuous, symbolism for architectural forms.

04011191 Architectural Models:(1Cr. Hr Prerequisite: None)
This course will focus on making a different types of models (Mass models, Analytical models,…) to learn about tools and materials used to produce models.

04013192 Advanced Construction Technologies:(3Cr. Hrs Prerequisite: 04012124)
This course cover different types of long span buildings (Industrial buildings, Sport buildings…) such as shells, tents structure, suspended systems, balloon systems and any new system may appear (Prefabricated, High Rise buildings,…etc.).
philosophical concepts that Islamic architecture depends on, and how these theories and concepts functionally could work at present.

04013293 Buildings Services:(3Cr. Hrs Prerequisite: 04012124)
This course deals with the design of water supply systems in buildings and residential complexes, methods of treating water, tanks of cold and hot water, sanitation systems of buildings and sites, drainage of rain's water, dealing with waste, systems of hot and cold water, systems of heating and air conditioning, solar energy, elevators and moving stairs, and fire extinguishing systems.

04014194 Special Topics in Architecture:(3Cr. Hrs Prerequisite: 04012251)
Special Topics in Architectural tectonics.
Special Topics in Urban studies.
Special Topics in Architectural practice.

04014195 Shop Drawings:(2Cr. Hrs Prerequisite: 04012124)
The application of shop drawings on a comprehensive multi functional project with various structural systems, and the preparation of all construction drawings, details, tables, according to local codes.

04014296 Urban Planning:(3Cr. Hrs Prerequisite: 04014242)
An introduction to Urban Planning principles, theories, and concepts,Contextual, public spaces and street spaces are examined through the world in both a contemporary and historical sense.

04015197 Housing:(2Cr. Hrs Prerequisite: 04014242)
The development of Housing concept on local and international levels, planning of residential area and its components, types and means for allocating services and utilities, the impact of residential environment on social relations, types and general characteristics of residential buildings, spontaneous residences and ways to deal with it in Jordan, housing investment policies.

04034131 Structural Mechanics of Structural Analysis for Architecture.(3 Cr. Hrs prerequisite: 01103102)
Force Systems, equilibrium condition, structural systems and materials, truss analysis, distributed forces, Shear and bending moment diagram, centroids, analysis of statically determinate frames, indeterminate structures: advantages and their degrees of freedom

04032123 Surveying.(3 Cr. Hrs. prerequisite: 01103101)
Introduction to surveying, types of surveying, principles and basic definition of surveying, types of measurements, chain surveying, scale, errors in measurements, linear measurements, bearings, leveling, profiles and cross-sections, contour lines, theodolite, area and volume calculation**.**

04032124 Surveying Lab (1). (1 Cr. Hr prerequisite or with 04032123)
Application on linear measurements using tapes and electronic devices, vertical and horizontal angle measurements, setting out details, elevation measurements, profile and cross-section plotting, contour mapping, topographical mapping, application on planometer, compass and slopes measurement devices.