Ministry of Higher Education and Scientific Research
University of Technology
Department of Architecture Engineering / Baghdad-Iraq

Academic Calendar 1987/1992

Historical Background

The Department of architecture Engineering founded in 1977 within the University of Technology in Baghdad.

The number of student admired into the department ranged from fifty to eighty students includes 10% from different Arab countries. After establishing in 1986 the degree of Master of Science in Architecture Engineering for two year length, the number of master student increase to twenty students in 2001/2002 in both urban design and technology of architecture study fields; then the Architectural design had been established during the years of 2002-2003. The Master of Science in Architecture is a research-based Master's degree for students interested in pursuing in-depth architectural research study includes one courses year and one research project year. In 1992 a graduate studies was started which offers the PhD philosophy degree in architecture and urban studies for minimum three years length. The program combines a practical and theoretical approach to learning and research. Students will conduct research in an area of their own selection to writing thesis.

Through its teaching philosophy and curricula, the Department of Architecture strives to develop a basis for a truly national architectural school that emphasizes the importance of inspiration from Iraq's architectural heritage with a sophisticated and contemporary approach in both architectural and urbanite scale. During the period 1977-2012, around 1900 architects graduated, many of whom are now well-established in various state establishments and some have also become well-known on the Arab-world and international levels.

The following courses have been identified as requirements for the five year B.Sc. program. Students are required to pass all these courses; these courses are listed in the following.

FIRST YEAR

Symbol	Subject	First Semester		Second Semester		Total Credit
		Weekly Hours		Weekly Hours		
		Theoretical	Practical	Theoretical	Practical	
AE 101	National Studies	1	1	1	1	3
AE 102	Computer (1)	2	1	1	2	5
AE 103	History of Architecture (1)	2	-	2	-	4
AE 104	Building Construction	2	-	2	-	5
AE 105	Building Physics	-	6	-	6	4
AE 106	Mathematics	2	-	-	-	4
AE 107	Architectural Representation (1)	2	-	2	-	4
AE 108	Principles of Architectural Design	2	6	2	6	8
AE 109	Descriptive Geometry	2	1	2	1	4
AE 110	Sports	1	2	1	2	-
AE 111	Workshops	16	12	13	14	-
Total		16	12	13	14	**41**
		28		**27**		

Total annual hours: 840 (excluding Workshops and Sports)
Total weekly hours: 36
Humanities hours: 60 (%7)
Basic Hours: 210 (%25)
Engineering hours 570 (%68)

Notes: First Aids is taught for (30) hours/year
Physical Education is taught for (60) hours/year
Summer training is for (4) weeks that is (120) hours per term

SECOND YEAR

Symbol	Subject	First Semester		Second Semester		Total Credit
		Weekly Hours		Weekly Hours		
		Theoretical	Practical	Theoretical	Practical	
AE 201	National Studies	1	-	1	-	3
AE 202	Computer	1	2	1	2	4
AE 203	Building Services	2	-	2	-	4
AE 204	Structure	2	1	2	1	5
AE 205	Arab-Islamic Architecture	2	-	2	-	4
AE 206	History of Architecture	2	-	2	-	4
AE 207	Planning Principles	2	-	2	-	4
AE 208	Building Construction 2	2	2	2	2	6
AE 209	Architecturalpresentation	1	2	1	2	4
AE 210	Architectural Design	2	8	2	8	9
Total		**27**		**28**		**36**

Total annual hours: 990
Total weekly hours: 33
Humanities hours: 60 (%6)
Basic Hours: 90 (%9)
Engineering hours 840 (%85)

THIRD YEAR

Symbol	Subject	First Semester		Second Semester		Total Credit
		Weekly Hours		Weekly Hours		
		Theoretical	Practical	Theoretical	Practical	
AE 301	Architecture and Environment	2	-	2	-	4
AE 302	Building Services (2)	2	-	2	-	4
AE 303	City History	2	-	2	-	4
AE 304	Science of Urban Sociology and Economy	2	-	2	-	4
AE 305	History of Architecture (2)	2	-	2	-	4
AE 306	Building construction (2)	2	2	2	2	6
AE 307	Structure (2)	2	-	2	-	4
AE 308	Interior Design	1	2	1	2	4
AE 309	Architectural Design	3	11	3	11	13
AE 3010	National Studies	1	1	1	1	3
Total		13	15	14	15	**40**
		28		**29**		

FOURTH YEAR

Symbol	Subject	First Semester		Second Semester		Total Credit
		Weekly Hours		Weekly Hours		
		Theoretical	Practical	Theoretical	Practical	
AE 401	Architectural Design Theories	2	-	2	-	4
AE 402	Urban Design Theories	2	-	2	-	4
AE 403	Building Systems	2	-	2	-	4
AE 404	Building Services	2	-	2	-	4
AE 405	Landscape Design	2	3	1	3	4
AE 406	Building Regulations	2	-	2	-	2
AE 407	Scientific Research Methodologies	-	-	2	-	2
AE 408	Computer aided design	2	-	2	-	4
AE 409	Architectural Design	3	11	2	11	13
Total		12	15	12	15	**38**
		27		**27**		

Total number of weekly hours = 32
Total number of annual hours = 960
Humanities hours: 60 (% 6)
Basic Hours: - 60 (% 6)
Engineering hours 930 (840) (%88)

FIFTH YEAR

Symbol	Subject	First Semester		Second Semester		Total Credit
		Weekly Hours		Weekly Hours		
		Theoretical	Practical	Theoretical	Practical	
AE 501	Building Economics	2	-	-	-	2
AE 502	Professional practice	2	-	2	-	4
AE 503	Housing	2	-	-	-	2
AE 504	specification & quantities	-	-	-	-	2
AE 505	specialized study	-	2	-	-	2
AE 506	Architectural Design	4	18	-	-	10
AE 507	Thesis Design	-	-	6	20	16
	Total	14	18	10	20	38
		38		30		

Total number of weekly hours = 62
Total number of annual hours = 870
Humanities hours: 60 (-)
Basic Hours: - 60 (-)
Engineering hours 930 (870) (%100)

Ministry of Higher Education and Scientific Research
University of Technology
Department of Architecture

Description Subjects of Curriculum 1987-1992

FIRST YEAR

AE 101 NATIONAL STUDIES

SEMESTER 1&2 - CLASS 1 - 3 CREDIT

The aim of this course is to discuss social culture and political relevant to history of national and Arab affairs.

AE 102 COMPUTERS

SEMESTER 1&2 - CLASS 1 - 5 CREDIT

An Introduction on computer work then the student is trained to simulate some basic logical computer programming by using "Basic" language. In the second semester, an introduction to statistics science; students are acquainted with some concepts and definitions: distributions, Arithmetic mean, Geometric mean, Harmonic mean, post mean squares, Dispersion, Regression & Correlation, Permutation and Combination.

Syllabus

Weeks	First Term
1-3	Introduction to computer science -Importance of computers and the reasons for studying them -Origin and development of computers -Computer generations -Computer and human brain - Computer advantages
4-6	Computer components and operation -hardware -software
7-8	Digital systems -Basics and properties of digital systems -The binary system and the reasons why it is used in computers - Arithmetical operations in binary system
9-12	Types of Computers -Analog and digital computers -Classification of computers in terms of size - Classification of computers in terms of use
13-15	Problem solution and formulation -Steps in problem solution using a computer -Algorithms -Flowcharts
	second Term

16-20	Programming Languages -High level programming languages -Low level programming languages -Machine languages
20-30	Introduction Basic programming language -Letters, numbers and symbols in Basic programming language -Constants and variables -Direct commands -Basics of writing a program in Basic programming language -Arithmetical substitution sentence -Input and output sentences -Non-conditionnel Transfer sentences - Conditionnel Transfer sentences -Comparison and decision making -Standard functions

AE 103 HISTORY OF ARCHITECTURE I

SEMESTER 1&2 - CLASS 1 - 4 CREDIT

The subject aims to show that architecture is a product of cultural effects: social, economic, religious as well as climatic and environmental and geographical effects. The syllabus for the first year students which concentrates on the development of architecture in the civilization of Mesopotamia and the civilization of the Mediterranean region will help the student to understand at the beginning of his / her architectural course the basic concepts of the early architectural engineering

Syllabus

Weeks	First Term
1-4	Mesopotamia Pre-historic settlements The age of dynasties , early Sumerians, the age of Erudo and the slaves The age of Warka, temples, architectural styles
5-8	Amoreen, ancient Babylon Age, Hammurabi Assyrians, temples, castles and towns, palaces, architectural styles Chaldeans, late Babylon Age, Zaqurras, temples and palaces, architectural styles
9-15	Introduction to the architecture of Nile valley, the historical sequence of dynasties Social and religious structure, pyramids Amarna and Tyypa places and temples Building methods and materials, architectural styles
	Second term
16- 20	Greek civilization, the beginning, Mycenaean civilization in Crete, Dryad Age- temples and column system

	Ionian Age
21- 23	Athenian Age –theatres, playgrounds, aquarium
24- 28	Roman civilization –introduction
	Temples, palaces, public bathrooms, victory arches
29- 30	Arab civilization before Islam- Hatra, palmyra (Tedmur),Ghassasina, Petra

AE 104 BUILDING CONSTRUCTION I

SEMESTER 1&2 - CLASS 1 - 5 CREDIT

In this subject, the student gets acquainted with the main elements which as a whole make up a building from the construction point of view and which take part in the transfer of loads to the ground. Emphasis is place at this stage on the system of load-bearing walls and on locally available building materials which play a major role in the completion of the success of this construction system.

Description

Weeks	
1-2	Building construction methods and force transfer
2-4	Main elements and components in the construction system
	Analysis of construction components
5-6	Foundation analysis
7-8	Wall analysis
9-10	Applications
11-12	Floor analysis
13-14	Roof analysis
15-17	Applications
18-19	Building materials include clay, brick, stone, thermo stone, concrete blocks
20-30	Standardized dimensions, locally made, uses, physical properties, bearing capacity, bonding, mortar, applications on applications made locally

AE 105 BUILDING PHYSICS

SEMESTER 1&2 - CLASS 1 - 4 CREDIT

The first semester course deals with the properties of building materials: their elasticity, strength, heat transfer. Other topics include acoustics, energy and climates elements. In the second semester, student are acquainted to principles of thermal design (thermal quantities, heat exchanges of building, periodic heat flow), the effected factors on the thermal environment of the building, natural design of building, means of thermal control (mechanical control, structural control and ventilation & air movement).

Syllabus

Weeks	First Term -- Applied Physics

1-2	Introduction to the study of physics and its effect on environment efficiency of buildings
3-4	Types of energy and its conservation
5-6	Status of equipment and methods of their operation States of energy : solid, gaseous and liquid
7-8	Heat and thermal capacity
9-10	Methods of heat transfer: radiation, convection and conduction. Humidity and pressure
11-12	Humidity and pressure
13-15	Centrifugal force and gravity, rotational motion
	Second Term ----- Building Physics
16-17	Introduction to climate and its elements
18-19	Heat criteria
20-21	The sun as source of heat and light
22-23	Sun motion, geographical orientation, solar angles
24-25	Shade and shadow, protection from direct and indirect solar radiation
26-27	Solar heat and thermal insulation
28-30	Thermal insulation of various building materials

AE 106 MATHEMATICS

SEMESTER 1&2 - CLASS 1 - 4 CREDIT

Mathematics is given to simulate the student's mind with respect to problem solving using mathematical methods and models. Subjects given include functions, derivatives, differentials, integrates, etc.

Syllabus

Weeks	First term
1-4	Vectors. Definition. Properties. Singular multiplication. Vector multiplication
5-6	Trigonometry and diagrams
7-11	Functions. Definition. Domain. Opposite domain. Inverse functions
12-15	Goals and derivatives
	Second term
16-20	Integration methods and their derivatives.
21-25	Area. Size. Length and surface area.
26-27	Functions and nodes
28-30	Compound numbers

AE 105 WORKSHOPS

SEMESTER 1&2 - CLASS 1 - 0 CREDIT

Students are trained to practice on different industrial workshops using the usual production equipment and machines include Blacksmith, Turnery, Carpentry, Welding, Foundry and Rolling. Various techniques of exercises are applied to improve the student's capabilities of the industrial design and full scale production processes and later to interpret the problems and solutions between design and implementation through discussion, report and proper drawings

AE 107 : Architectural Representation (1)

SEMESTER 1 - CLASS 1 - 4 CREDIT

Architectural representation which is taught in the first two years aims to develop the students ability for visual and graphic expression through improving the student capability in free hand drawing and rapid sketching in the first place and through perspective and isometric drawing and methods of architectural representation in the second place

Syllabus

Weeks	
	First term
1-15	The syllabus is organized in such a way as to allocate 3 lessons per week for free hand drawing for two weeks thus the student is offered the items of the syllabus of free hand drawing each other week with emphasis in other lessons during the week on the items of engineering drawing and isometric projection The items of free hand drawing syllabus are: - methods to make accurate measurements of proportions and angles - sketching and shading with a pencil - sketching in ink
	second term
16-30	Free hand drawing will cover in time sequence - models - furniture - buildings - street views - heritage buildings • Mustansireya School • Abbassi Palace • Historic houses in Bab Al Sheikh

AE 108 PRINCIPLES OF ARCHITECTURE DESIGN

SEMESTER 1&2 - CLASS 1 - 8 CREDIT

Description of Architectural Design (1) and Architectural Representation
This course aims to introduce the student to the nature of architecture and the surrounding environment as well as to develop his/her ability to describe and analyze through

- Analytical study of samples of already existing traditional and contemporary architecture in order to develop his/her ability to distinguish and abstract the compositional concepts. These concepts include:
  - Concepts on function
  - Concepts on construction
  - Concepts on aesthetics
  - Concepts on space

Syllabus

Weeks	First term
1-15	Most exercises in architectural design depend on the analysis of architectural forms and concluding their composition rules The sequence of exercises begins in the form of groups starting with two dimensional studies and ending in three dimensional ones • Facade , projection, formulation methods, The organization lines of the façade • The composition of building blocks The two- and three-dimensional analyses • The composition of spaces -the principles and styles of abstractionism -social factors -functional factors /organizational
	Second term
16 -30	• Constructional structure -Constructional systems and their architectural expression -implicit expression of the system and ornamental expression • Environmental / climatic factors - environmental /social -location factor/ content and measurement Program and form It also aims to illuminate the effect of these concepts in the light of social, cultural, environmental, and climatic factors. The course depends on field observation as well as class assignments. - It also aims to develop his/her ability to describe and analyze through different styles of drawing including two- and three-dimensional drawing. This course aims to develop student ability to assess architectural form characteristics through field study as well as class assignments.

AE 109 DESCRIPTIVE GEOMETRY

SEMESTER 2 - CLASS 1 - 4 CREDIT

The student is introduced to the basic principles of plane surveying including how to use leveling instruments in order to define height, and vertical coordinates as well as carrying out laboratory work involving leveling and surveying for details and applications in three dimensional definition and in drawing contour maps

Syllabus

Weeks	
1	Types and uses of area
2	Measurement (linear area)
3-6	Leveling
7-10	Angles and vectors
11	Calculations of vertical coordinates
12-15	Topographic surveying

SECOND YEAR

AE 201 NATIONAL STUDIES

SEMESTER 1&2 - CLASS 2 - 3 CREDIT

The aim of this course is to discuss social culture and political relevant to current national affairs.

AE 202 COMPUTER AIDED DESIGN

SEMESTER 1&2 - CLASS 2 - 4 CREDIT

In order for student of architecture to learn how to use modern technological machines especially the capabilities of computer, it is necessary that the student should acquire enough experience to make use of the capabilities of computer. This means the student is introduced to new technologies including computer and programming in Basic and its use in the field of architecture. He will be able to use computer as a helping aid in architectural design process AE

Syllabus	
1	Review of Basic programming
2-4	Matrices and their types
5	Arithmetical operations on matrices
6-8	Solving some mathematical problems by using matrices Branch programs
9-10	reasons for using branch programs converting branch programs to main program
11	Files types reasons for using them Computer aided drawing
12	drawing by key-board functions of computer aided drawing
13-15	Application in architectural engineering feasibility study on construction and upgrading projects -façade and elevation design Using ready-made programs in architectural engineering

AE 203 Building Services (1)

SEMESTER 1&2 - CLASS 2 - 4 CREDIT

This subjects composed of two main parts which are important in building services. They are sanitary services and mechanical services
The student is acquainted in the first part that is sanitary services with the conditions that affect health both inside and outside the building including water system supplied to various services inside the building, the drainage system, heating water systems and their use inside the building, Calculation of storm water drainage.
In the second part the student is introduced to the various systems of cooling and heating in buildings and the required space, instruments and equipment for the system and the expected effect on the design of the building. Thus the student will learn how to calculate the size of the components of the system. This subject will enable the student to form a theoretical basis so that he is qualified to reach real, practicable and efficient solution which will help him in his/ her design projects in coming years

Description

Weeks	First Term - Sanitary Services
1	Introduction to types of services and their relation with the design process. Emphasis will be placed on sanitary services and mechanical services
2-3	Pressure in means and annexes
4-5	Design of water network in a building
6-7	Cold drinking water and hot water-components and calculation
8-9	Wastes types and methods to drain them inside a building
10-11	Design and calculate the size of the components of the system
12-13	Drainage of storm water
14-15	Ventilation requirement in kitchens and bathrooms
	Second Term –Mechanical Service
16	Introduction to air conditioning –Basic concepts
17-18	Main properties of atmosphere air. Ideal air conditioning systems
19	Man and air-conditioned environment. Thermal comfort. Comfort indicators
20-21	Estimation of thermal load on a building. Design consideration. Heating and cooling loads
22-23	Air conditioning systems and methods of testing them
24-25	Air distribution systems. Air distribution inside rooms. Design of air ducts
26-27	Calculating the size of components and spaces for different for air conditioning
28-29	systems
30	Application

204 STRUCTURE I

SEMESTER 1&2 - CLASS 2 - 5 CREDIT

In this subject the student is introduced to the properties of materials and the loads exerted on the structure. The student is will be able to analyze the forces on structure components such as roofs and shell roofs and structure framework. The student is will be able to estimate the behavior of structure under a given load. During the year thestudent is required to give solution to selected structural problem as a home assignment

Description

	First term
1-2 3 4-6 7 8-11 12-13 14-15	1-Loads on structure and how they move 2-Technology of materials 3-Statistics 4-Strucural elements under axial loads 5-Analysis of simple and continuous beams 6-Shell analysis 7-Analysis of frames
	Second term
16-18 19-20 21 22-23 24 25-26 27-30	8-Analysis of closed structure 9-Analysis of arches 10- Roof and corrugated roof analysis 11- Analysis of buildings 12- Analysis of shell stress in buildings 13- Analysis of s[ace component 14-Fundamentals of building requirements

AE 205 Arab-Islamic Architecture

SEMESTER 1&2 - CLASS 2 - 4 CREDIT

The student is introduced to the concepts or principles of design in Arab-Islamic Architecture. Building patterns, their specific morphology and development are dealt with through explaining the development in building materials, construction concepts as well as the effects of climate and environment. The student's architectural vocabulary is enriched with items from his / her heritage so that he is enabled and encouraged to use them in the design early in the study of architecture

Syllabus

Weeks	First term
1-3 4-6 7-9	The origin of Arab-Islamic architecture The architecture of mosques and palaces of governors The architecture of early Islamic towns: Basra, Kufa, Wassit, Baghdad and Samarra.

10-13 14-15	Architectural vocabulary: palaces, minarets, domes, schools, khans and fortresses Arab-Islamic decoration: calligraphy, various kinds of decorations and ornament This vocabulary is covered through the following topics Early Islam Umayyat age Abbassiyad age Fatimayyon
	Second term
16 17-19 20-21 22 23-26 27-30	Andalus Mogul and Jalliyun Salajika and Mamalik Ottomans North Africa (Morocco and Tunisia) Other Islamic countries (India, Pakistan, East Asia, African countries Contemporary local architecture: traditional Baghdadi houses

AE 206 HISTORY OF ARCHITECTURE II

SEMESTER 1&2 - CLASS 2 - 4 CREDIT

The items of this subject complete what the student learnt in the first year with emphasis on the historical development of architecture as a result of the effect of building materials and concepts in construction (the architecture of cathedrals in the Medieval Ages) and also as result of rules and theories on the creation of architectural form (the architecture of the renaissance and the eras following)

Syllabus

Weeks	First term
1-3 4 5-7 8-10 11 12-15	Architecture of Byzantine age. Byzantine churches. Russian and Asia Minor churches and Basilica Architecture of Medieval Ages. Caroline age, The establishment of abbeys Romantic age Gothic age Castles and European town palaces The renaissance: Italy, palaces. Churches, theaters
	Second term
16-21 22-30	Baroque age: churches, palaces. Baroque ornament The age of industrial revolution. Development of inventions. Industries of the classical age. Creation of industrial compounds. Buildings for industrial fairs

AE 207 Planning Principles

SEMESTER 2 - CLASS 2 - 4 CREDIT

This course is intended to give general idea on the concept of urban planning in towns and to give also a quick view on town planning through time. The student is introduced to town components and the main activities taking place in it and the way to provide spaces for these activities

Syllabus

Weeks	
1-15	- Definition of planning covering terms and main concepts - Planning levels: from national planning to locality planning - The concept of region - Factors affecting of the selection of town location - The historical development of the town through history - Component of a modern town - Factors and elements of town growth—growth centers - Principles of land use - Land division and legal restraints - expropriation - introduction to concepts and terms of master planning, land use and detailed design

AE 208 Building Construction

SEMESTER 1&2 - CLASS 2 - 6 CREDIT

The student is introduced to the structure system in building. The student will get familiar with the components which make up the construction system already completed. Attention will be paid to the vertical transfer method in buildings of all types. Windows, doors concrete parts made on site with their properties and types will be studied

Description

Weeks	First term
1-2 3-4 5-6 7-8 9-10 11-12 13-15	Vertical transfer in buildings Staircase, elevators, slopes Building and finishing materials used in vertical movement Applications Doors –types, design, dimensions, specifications materials, function Applications Windows - types, design, dimensions, , specifications, materials, function Applications
	Second term

16-17	Components of the structure
18-19	Applications
20-21	Concrete roofs cast on site and their details
22-23	False ceilings
24-25	Applications
26-27	Pre-cast concrete roofs and their details
28-30	Applications

AE 209 Architectural presentation

SEMESTER 1&2 - CLASS 2 - 4 CREDIT

develop the students ability for visual and graphic expression through improving the student capability in free hand drawing and rapid sketching in the first place and through perspective and isometric drawing and methods of architectural representation in the second place

Syllabus

week	first term
1-15	The same procedure followed with the first year students will be adopted here. In other words, three hours will be used for free hand drawing each other week covering the same topics covered with the first year students but the difference is that the drawing this time is made in ink in the first term and in water color in the second term. Architectural representation methods over the remaining weeks of first and second terms covers the following items
	Second term
16-30	Building up perspective drawing Methods of architectural representation: - Pencil (colored and black) - Water color - Ink, printing and copying

AE 210 ARCHITECTURE DESIGN I

SEMESTER 1&2 - CLASS 2 - 9 CREDIT

In this year the student starts the actual practice in architectural design. The student will learn

- The sequence of stages in the design process and finding the various means to do it
- Understanding and reflecting environmental factors on the shape of architectural form
- Understanding and reflecting the interaction between the building and its contents on a large scale
- How to express architectural concepts through organizational and constructional rules

combining in one frame the different building elements
- Using the appropriate style, the student can reflect the nature and special features of the building

Develop the student graphical ability so that it is used in the design process

Syllabus

Weeks	The following items of the syllabus which clearly reflect the description of the subject will achieve the main goal through the following educational means
	- Using architectural criticism process as a means of design - Well-designed lectures over the two terms covering the syllabus listed herein - Making scheduled visits to certain sites for specific purpose - Students submit reports and hold seminars both individually or collectively covering design information so that the students learn how to analyze and deduce useful information - Students are taught how to use references for their reports - Students are taught how to exploit the theoretical lectures in design process - Students are taught how to make use of knowledge gained in the first year The design team sets a number of projects for students to find design solution to. They include First project: The student will learn in this project how to collect main information, the way to use it. Students are taught how to the primary skills needed to define the problem and the way to solve it using graphical means
1-4	The design team will deliver lectures on the following topics - Activities in building design - Architectural space and the human dimension - Using graphical means in the design process - Means of architectural expression
5-8	%10 is allocated for this project The second project The student will learn in this project, in addition to the above-mentioned topics how the location affects architectural design, the role of the repetition process as well as the study of the resulting space outside. The students make visits to sites of selected projects The design team will deliver lectures on the following topics - The utilization of external spaces - The effect of motion and services around the building - Selected examples of successful architectural solutions
9-15	10% is allocated for this project The third project: This project will concentrate mainly on the effect of environmental and climatic factors on the shape of a building.

	The design team will arrange site visits to a number of completed projects and explain the effect of environmental factors on the architecture of a building and give the suggested architectural solution. The students will also give lecturers under the following titles - Different architectural solutions for dealing with environment and climate - Evaluating architectural spaces in terms of environment - Modern trends in architecture and environmental expression. Examples of pioneers in modern movement
16-23	15% is allocated for this project The fourth project: This project will concentrate on building materials in terms of construction and environment. The students are divided into groups. Each group will select a specific construction method and adopt it in the design process. Each group gives lectures on one of the following titles: -Building materials and design capability -Construction solution and architectural expression -Translating the preliminary architectural solution into architectural details -The role of expressive diagrams in re-evaluation of architectural design Students are required to submit technical diagrams
24-30	25% is allocated for this project Final project At this stage, the student is qualified to move to the third year by the end of the project in which the student is asked to design large architectural space which is subject to the variable activities and environment, health and construction requirements. Students are required, through their groups, to submit essays, reports and suggestions on the main design requirements. Part of project mark is allocated is allocated for this work. The students will also give lecturers under the following titles - Architectural thought and expression - Form and content in architecture - Definition of architectural functions of a building and form - Coordination of services in architecture 20% is allocated for this project 10% is allocated for student work in the class 10% is allocated for class assignments and projects

THIRD YEAR

AE 301 ARCHITECTURE & ENVIRONMENT II

SEMESTER 1&2 - CLASS 3 - 3 CREDIT

The subject aims to introduce the students to the importance of climatic environment and the extent it affects the architectural characteristics of a building through understanding of the principles of climatic design and the possible solutions to be followed to reach effective results helpful in the design of buildings in dry hot countries resulting in successful climatic design and getting distinctive local architecture. The student is introduced also to the means to ensure saving in energy and to alternative replacement for energy in mechanical applications
The subject is regarded as the theoretical basis for environmental design solutions which student must understand and use the architectural projects for this and coming years

Syllabus

Weeks	First Term
1-2	Climatic environment –introduction Factors which affect the thermal interaction between human body and the environment around him/her.
3-4	The sun as source of light. Analyzing the type of sun light.
5-6	The line of sun motion. How it is calculated in different ways
7-8	Calculating the sun spot inside a building (theoretical bases) Calculating the sun spot inside a building (practical exercise, graphical method)
9-10	Designing sun shades both horizontal and vertical (theoretical bases) Practical exercise using graphical method
11-12	
14-15	Calculating sunlight permeation including sun shades The sun as heat energy. Heat storage. Finishing materials
	Second Term
16-17	Selecting the appropriate engineering proportions for buildings
18-19	Heat exchange in the structure of buildings
20-21	Natural ventilation. Wind movement round and inside the building
22-23	Design of windows and other elements (balcony) taking ventilation into consideration
24-25	Climatic characteristics of traditional houses compared with modern ones
26-27	Negative design in solar energy : bases and principles
28-30	Designing thermally equalized buildings

AE 302 BUILDING SERVICES

SEMESTER 2 - CLASS 3 - 4 CREDIT

This subject covers services of sound reduction, natural and artificial lighting. The student is introduced to the rules and principles of sound and sound insulation. Different sources of sound

and noise inside and outside a building. The student is introduced also to calculate the type and quantity of natural and artificial lighting and the components of each one, and the relation in design between them and the architectural space. The student is required to be be acquainted with design criteria for types and dimensions of openings in the building. Natural and artificial lighting should be designed efficiently because lighting affects the sensuous and visual perception of the nature of architectural space.

Syllabus

Weeks	First Term- Audio services
1-2	Types of sound waves. Speed of sound. Wave phase. Pressure. Decibel.Level of pressure and capacity
3-4	Types of sound sources. Directivity. Human ear. Pitch. Sounds from tunes. Grow and decline of sound in a room. Number amplification. Absorption coefficient.
5-6	Equation for amplification momentum. Wave theory of sound rooms and auditorium,
7-8-9	include special rooms) include multi-purpose auditoriums include special rooms)
10-11	audio reflectors. Sound and routine buses,
12-14	Sound insulation, insulation inside and outside the building, insulation of sir ducts, (cooling and air conditioning)
15	Exercises
	Second Term
16-17	Introduction to natural and artificial lighting, components, importance, design
18-19	Factors affecting the type of natural lighting
20-21	Types of openings, their effect on type and proportion of natural lighting
22-23	Calculation of proportion of natural lighting
24-25	Factors affecting the type of artificial lighting, Types of lamps
26-27	Calculation of proportion of artificial lighting.
28-29	Fundamentals in designing artificial lighting
30	Designing efficient natural and artificial lighting system in an interior space.

AE 303 CITY HISTORY

SEMESTER 1&2 - CLASS 3 - 4 CREDIT

The student is introduced to the development of urban form including building units and spaces in and between them. The urban space is studied as a result of the interaction of the effects of environment, climate, and social factors as well as aesthetic and philosophical values and principles.
The course intends to provide the student with capability to comprehend and use the historical understanding in architectural design and urban design and in the design of external space

Syllabus

1-2	General view on the origin of the town and early urban settlement
3-8	The city in olden times: Mesopotamia, Nile valley, India and China and Central

	America
9-11	Greek and Roman cities
12	Cities in medieval Ages
13-17	Cities of the Arab Islamic world: Spain and North Africa, Middle East and Far East
18-20	Cities of the Renaissance
21-22	Cities of the Baroque and palace cities in Russia
23-25	Cities of the Industrial Revolution and Utopian cities
26-29	The Twentieth Century: RatibCorborea, Brasilia, Dakkar, Shandigar
30	Trends in future city design

AE 304 Science of Urban Sociology and Economy

SEMESTER 1&2 - CLASS 3 - 4 CREDIT

The first term will concentration urban sociology. The students introduced to the concept of urban sociology, the study of urban society, social relations at neighborhood level and the effect of these relations on the texture and urban structure of the city.
The second term will study the main economic factors which affect the society of a city and the way these factors come into play on the size of the city and the distribution of activities within it. These factors affect positively or negatively the building and growth of the city and the way available resources are utilized effectively..

Syllabus

Weeks	Urban sociology (1) Some basic principles are introduced Social interaction Social conception of town Neighborhood The concept of new towns Social use of space Urbanization : causes, characteristics and results with emphasis on urban characteristics in developing countries Social and psychological aspects of town growth Town planning and its relation with health of inhabitants Sector analysis and urban activities in terms of social aspects - Housing - Urban transportation - Shopping - Recreation

AE 305 HISTORY OF ARCHITECTURE II

SEMESTER 1&2 - CLASS 3 - 4 CREDIT

This subject aims in the third year aims to develop the ability to use the historical understanding in architectural design and criticism as well as understanding the way modern architecture is affected by previous historic heritage. Emphasis is place on the creation of modern architecture at global level and development of architecture in Iraq.

Syllabus

Weeks	
1-2	The beginning of modern architecture in the civilization of the nineteenth century and early twentieth century through Utopian and futuristic architecture
	New style and expressionism, American school – Chicago and Sullivan
3	Frank Lloyd Wright
4-7	The German school, Bauhaus
8-9	Post war architecture. Spread of intentional style
10	International architect
11-18	Rise of post war architecture
19	Regional architecture
20-21	Modern Iraqi architecture-the architecture of fifties and sixties
22-30	

AE 306 BUILDING CONSTRUCTION II

SEMESTER 1&2 - CLASS 3 - 6 CREDIT

In this subject, the student will learn the latest developed technologies building construction with emphasis on the modern steel structures which contain large spaces and concentration on the elements which are used in the construction and finishing. The student will learn how to prepare technical report on building construction systems and architectural composition

Syllabus

Weeks	
1-2	The proposed building construction system and its relation to size and area of the space
3-5	The kinds of construction networks and methods of selection
6-8	Architectural construction networks
9	Concrete /steel framed structures
10-11	Types of foundations for framed structures
12-13	Building shells
14-15	Joining in framed structures
16-17	Types of joints
18-20	Standardized coordination and standardized dimensions. The relation among the designer, the society and the contractor

21-22	Pre-fabricated buildings and their types
23-24	Industrial buildings
25-26	Members making a large space
27-28	Effect machines and equipment on industrial building design
29-30	Specialized details (external space)

AE 307 STRUCTURE II

SEMESTER 1&2 - CLASS 3 - 4 CREDIT

The student is introduced to methods of designing constructional elements which consist of reinforced concrete, beams, roofs, columns. The subject also aims building a scientific base which will qualify the student to make sure of the accuracy of the structural system and the way pre-stressed concrete and pre-cast is used. He is introduced also designing steel structures

Syllabus

Weeks	
1	1-Introduction to structures
2	2-Inroduction to structures-loads exerted on structures
3	3-Properties of concrete
4-6	4-Design of beams
7-8	5-Roof and axial stress
9-12	6-Types of roofs and design of roofs - one directional roofs - two directional roofs 7-Exercises
13-16	8-Columns
17-19	9-Foundations 10-Exercises
	11-
20-22	- Introduction to pre-stressed concrete
23-24	- Introduction to pre-cast concrete
25-26	- Roofs and shell roofs
27-30	- Design of steel structures

AE 308 INTERIOR DESIGN

SEMESTER 1 - CLASS 3 - 4 CREDIT

The subject aims to introduce the student to the principles of interior design with itstwo branches: the first includes creating the space as an entity with distinctive features which complements the suggested architectural expression. On the other hand, the second one covers the design vocabulary of interior space includes color, lighting (both natural and artificial) ,

finishing materials and noise control	
Syllabus	
Weeks	
1-3	General definition of component of interior design
4	Interior design results from architectural expression and its relation with external space.
5-6	The building shell and the extent of environmental control it provides over internal space “thermal insulation”, sound insulation and how much light it provides etc
7-10	Theories on color. The psychological effects of color and its design Internal lighting , natural sources. View point of the suggested design
11-15	Finishing materials and their details. Covering of walls, Windows and doors, false ceilings, the relationship between building materials and organization with constructional frame of the building
16-25	Furniture. Furniture technology. Furniture organization and its effect on the character of the interior space
26-30	Samples of interior design projects. Details of design covering all above mentioned points

AE 309 ARCHITECTURE DESIGN

SEMESTER 1&2 - CLASS 3 - 13 CREDIT

The subject taught this year is a continuation of that taught in the previous years. It aims to enforce the experience the student gained from the previous stages of the design process.
For this purpose, the student will be introduced to two design projects in addition to working on detailed charts of a project
Emphasis will be placed at this stage on developing the student capability in the following fields in addition to what was taught in previous stages: The student will be able to

- distinguish, analyze and express the requirements of a building function. He will be able to do so through various means to search for visual, spoken, and numerical information
- understand the effects of function requirements of the building on the choice of construction system
- understand the effects of construction concepts / form on the choice of building materials and construction system and express them
- emphasize the effects of climatic environmental effects on design solution

Syllabus	
Weeks	
1-3	The subject is taught through three main exercises. The first exercise which lasts the whole of the first term covers the following topics: A- methods for developing design ideas and evaluating each one B- analysis of function requirements and their effect on design alternatives C- evaluating the site and analyzing the elements acting on design decisions D- evaluating internal spaces in terms of the total design idea

	E- evaluating the construction network and its relation with design alternatives. F- types of motion
3-9	The exercise also involves designing a building serving a variety of clear activities. The proposed building will not constitute a landmark different from neighboring buildings (height does not exceed 11m from the floor) The student also prepares a study on the design details (part of the façade, the interplay of more than two building blocks, replacing a building material etc.). The second exercise covers part of the second term. In this exercise, the student. The student is introduced to concept of architectural industry (There is a clear production line). The effects related to this concept are evaluated
10-12	The exercise also involves the following A- the function relations and their connection to construction alternatives B- movement in and out and its connection to function C- climatic and environmental effects on design solution D- service requirement E- appreciation of the building both internally and externally by operators and visitors F- the effect of the selected building materials on shape and form
13-15	In the third exercise, the student is asked to translate the design solution of one of the other exercises to implementation drawings covering construction method, elements of joining materials and detailed tables covering (doors, windows etc).as well as details on construction and services. This project is expected to continue to the end of the academic year and is related to theoretical subjects such structure, building services and building construction etc. The academic staff member in charge of the class and the team working with him will deliver specialized lectures in hours allocated for the theoretical part. They will cover the following aspects in addition to the point listed in the goals of each exercise
16-17	First Exercise 1- constructional components anf their relation with nature of solutions to activities 2- the effect of external environment on design solutions 3- representation and its relation with the proposed design 4- design details
18-24	Second Exercise 1- The effect of production line on architectural expression 2- Environmental services and specialized services 3- Means of transport and internal movement
25-30	Third Exercise 1- Components of detailed drawings 2- Systems of detailed drawings 3- Introduction to the effect of constructional systems on detailed drawings 4- The effect of construction method on detailed drawings

	First Exercise The students are divided into groups. Each group studies definite elements of the project Design solutions) The marks for these parts in the final evaluation Representation and details) Specialized designs (interior design) Second Exercise Group study 75% Design solution. design detail, representation 20% Third Exercise The student submits two projects The student's work during the year is evaluated 05%

FOURTH YEAR

AE 401 Architectural Design Theories

SEMESTER 1&2 - CLASS 4 - 4 CREDIT

This subject is intended to acquaint student with the relation between architecture and the society studying the relation among three poles

1- The producer /production
2- The product
3- The consumer

The physical and psychological dimensions of these poles should be taken into account through analysis of the vocabulary of the design process. The student is introduced to different aspects of adjusting the urban structure. The aspects include the following

1-As regards the first aspect i.e., producer /production, the emphasis will be on the design process and the methods use in it

2-The product: Here the student gets acquainted with various ways used in criticism and evaluation

3The consumer : The student gets acquainted with the effect of architecture on the behavior of Man

4- The information theory is presented as a system unifying all the above

Syllabus

Weeks	
1-4	Introduction to architectural design theories
5-8	Architectural theory as an information system
9-13	Comprehension and knowledge
14-18	Indicating sign and architectural expression
19-23	New developments in design methods
24-30	Means of innovation and conjecture of design solutions

AE 402 Urban Design Theories

SEMESTER 1&2 - CLASS 4 - 4 CREDIT

This subject is intended to acquaint student with the concept of urban design and its development both historically and theoretically and also with the explanation of the concept of aesthetics and form of urban space and the effect of their interaction on human life in town and the future of urbanism-related problems

The course aims also to develop operational framework for urban design so that the student get practical background that helps the student take part in laying urban solutions

Syllabus

Weeks	

1-4 weeks	1-The concept of urban design is defined and its history explained. The relation of urban design with urban planning and architectural design is illustrated
10 weeks	2-The concept of the aesthetic and formal aspects of urban spaces is explained together with the potential to categorize and tabulate them as reflecting the trends of thoughts which led to diverse and intricate ways and means. The results are distinctive urban design concepts such as sensuous perception and thought affinity
4 weeks	3-Urban problems are explained and their reciprocal effects on human life in town
6 weeks	4-The student is introduced to the basic vocabulary used in urban renovation for example executive policy of urbanism, constraints and main concepts, Evaluation and re-evaluation. Selection and preference etc.
6 weeks	5-The student is acquainted with urban problems which spring up from projects Of urban renovation if these projects are in the form of single buildings or building complexes in integrated projects and the future effects of these projects on social, economic, psychological and environmental phenomena

AE 403 Building Systems

SEMESTER 1&2 - CLASS 4 - 4 CREDIT

The subject is intended to qualify the student technically and theoretically so that he is able to choose the preferred construction system for a project by using efficiency test for each project. In addition, the student is introduced to the way in which a construction system is modified to agree with the selected building material and the type of the project so that best economic return is achieved or environmental efficiency is improved

Syllabus

Weeks	
1-3	Methods of executing load bearing walls
4-5	Use of reinforced concrete (on site casting
	Concrete blocks for reinforced walls
	Advanced framed structures
6-7	Box framed structures
8-9	Cabled structures
	Shell buildings
10-15	Plane surfaces
	Twisted surfaces
	Curved surfaces
16-17	The tent system
18-20	Systems depending on suspended cables
21-22	Components of single spaces (one dimensional)
23-25	Components of compound spaces (two dimensional)
26-30	Structures by air (compression)

AE 404 Building Services

SEMESTER 1&2 - CLASS 4 - 3 CREDIT

This subject covers general services which should be provided in every building such as fire extinguishers, rubbish collection and protection systems in buildings. It aims also to introduce the student to transportation systems and electrical wiring in buildings. The student will be acquainted with advanced civil service technologies in buildings such as devices for controlling environmental comfort

Syllabus

Weeks	First Term
1-2	Introduction to different systems and services
3-4	Using electric energy in buildings
5-6	Instruments for measuring large quantities and calculating wire and pipe dimensions and methods of laying
7-9	Fire protection
10-12	Fire insulation, construction elements, finishing materials
13-14	Fire extinguishing systems
	Second Term
16-19	Vertical motion—escalators, elevators, conveyor belts, staircases
20-21	Rubbish collection—principles and systems
22-24	Protection systems in buildings - Protection from the weather effects - Protection from robbery and aggression - Protection of security building
25-30	Sensing systems to provide environmental comfort inside buildings. Using modern technology to provide different services inside buildings (Examples and applications)

AE 405 Landscape Design

SEMESTER 1&2 - CLASS 4 - 3 CREDIT

The student is introduced to the principles of landscape design, emphasizing integration and coordination between architectural design and design of the site where the building block is to be built. The syllabus items are divided into three parts. They are design rules and principles, plant and building components and finally site analysis and study. Design orientations will take shape.

Syllabus

Weeks	
1-3	A historical overview of the internal landscape schools
4-5	Towns and town open and green spaces
6-7	The ecological content of space design

8-10	Principles of design
11-١٣	Components of site, soil, topography, climate, existing blocks,
14-17	Components of function, motion, specialized functions ,schools, housing, parks
18-22	Components of design, building elements (building, floors . retaining walls . staircases, plants, bodies of water
	Stages in design process
23-24	Samples of projects executed inside and outside Iraq
25-30	

AE 406 Building Regulations

SEMESTER 1&2 - CLASS 4 - 2 CREDIT

This subject aims to acquaint the student with the most important laws and regulations which govern building and urban spaces planning and design and upgrade their environmental, health and constructional efficiency, taking into consideration the needs the users and of the disabled.

Syllabus

Weeks	First Term
1	Introduction to building laws and regulations
2-4	Iraqi laws which govern building
5-6	Laws which govern fire protection in buildings
7-8	Laws which govern fire escape and safety in buildings
9-11	Laws which govern environmental and health aspects in buildings
12-13	Laws which govern vertical movement in buildings
14-15	Proposed Unified Building Law for Baghdad
	Second Term
16 17 18 19 20-24 25-28 29-30	- A historical overview on laws which govern planning and building and their relation with construction and development projects in town - The available laws in Iraq which govern planning and building - Which laws which govern planning and building are missing in Iraq - Discussion on the law on municipalities management - Regulation of 1934 governing roads and building - Building laws and regulations from Arab and foreign countries - Specifying standardized specification for land division in Iraq Intersection in large building compounds and projects Numbering Heights Services systems An overview on the proposed Unified Building Law for Baghdad

AE 407 Scientific Research Methodologies

SEMESTER 1&2 - CLASS 4 - 2CREDIT

The first of the subject introduces the student to the principles of scientific research especially in architecture through explaining scientific concepts and methods used and the fields of scientific research. The second part involves finding a practicable means to connect the scientific research methods to the actual field of architecture through studies and exercises to connect between and design of specialized buildings

Syllabus

Weeks	
1-3	- Analysis of the problem, introduction to research stages, research problems, methods of analysis, common mistakes, defining the difference between research and architectural design
4-7	- Scientific research: introduction to research goal, its characteristics ,criteria for its acceptance, main methods for conclusion drawing, analogy as a source of architectural ideas, criteria for checking the accuracy of conclusions and predictions,
8-15	- Strategies of scientific research; introduction to scientific research, strategies through the type of relation between theory and its proof and sequence, introduction to measured and unmeasured theories, laws and hypotheses, methods used in historical research, descriptive survey, experimentalism, analytical
16-17	- Space requirements and programming
18-20	- Methods and criteria for space calculation
21-23	- Evaluation of space relationships and their effect on space requirements, the effect of multiple uses on space requirements,
24-25	- Specialized buildings and space requirements,
26-27	- Description of spaces, tools and equipment
28-30	- Evaluation of space programming. The student has to choose a specialized topic related to his/her fifth year design thesis such as space programming, a specialized building like health or educational buildings

AE 408 Computer and Architecture

SEMESTER 1 - CLASS 4 - 4 CREDIT

The student is introduced to different types of computers and their uses in the field of student specialization, The student will learn how to use the computer to draw charts architectural shapes with accuracy. Students should use the computer lab so thst they complete the project properly

Syllabus	
Weeks	
1	Introduction
2-3	Introduction to types of computer operation, computer components and uses in the field of architecture. An overview on computer manufacturers. Computer languages Computer structure
4	Computer languages and their uses
5	Introduction to BASIC language, fields of application and terms used
6	Practical application in BASIC
7	How to write elementary programs
8	How to deal with computer to programs
9	Practical application in a variety of programs
10	Dealing with BASIC and calculating lengths and area of certain spaces
11	Flowcharts
12	Practical applications in calculating students' criteria on design
13	Sub-programs
14	Triangular ratios and their use in BASIC program
15	Matrices (1)
16	Organizing and drawing coordinates for simple program
17	Practical applications in drawing coordinates
18	Drawing simple charts by using computer using special programs
19	Practical applications in drawing charts
20	Matrices (2)
21	Using matrices in organizing and analyzing charts
22	Practical applications in drawing plastic charts
23	Definition of graphics. Background and its application and use
24	Programming and organizing maps for towns
25	Practical applications
26	Use of computer architecture
27	A-How to draw maps on a computer
28	B-Colors
29	Architectural diagrams
30	Principles of drawing Architectural perspective

AE 409 Architectural Design

SEMESTER 2 - CLASS 4 -13 CREDIT

This subject aims to introduce the student to housing policies and housing project planning and design, The student acquainted with types of urban and rural housing and international and local building technologies

Syllabus

- General overview of the concept of housing
- Factors of housing shortage and deficit in housing budget, the concept of supply and demand, population growth, shortage in building materials and workforce
- Fundamentals of making a housing program, ethnic and social groups
- Factors playing a part in housing cost
- Housing investment
- Housing subsidies
- Housing policies
- Types of housing units and manner of building them
- Types of building used for housing unit and manner of building them
- Criteria of urban housing. Criteria of housing units
- Criteria of social and technical services for infrastructure
- Criteria of rural housing. Criteria of housing units
- Planning for housing complexes, size of a neighborhood, quarter, section, sector
- Reasons for the degradation of housing sections and units
- Housing renovation

Technologies adopted in housing projects

FIFTH YEAR

AE 503 Housing

SEMESTER 2 - CLASS 5 - 2 CREDIT

This subject aims to introduce the student to housing policies and housing project planning and design, The student acquainted with types of urban and rural housing and international and local building technologies

Syllabus

- General overview of the concept of housing
- Factors of housing shortage and deficit in housing budget, the concept of supply and demand, population growth, shortage in building materials and workforce
- Fundamentals of making a housing program, ethnic and social groups
- Factors playing a part in housing cost
- Housing investment
- Housing subsidies
- Housing policies
- Types of housing units and manner of building them
- Types of building used for housing unit and manner of building them
- Criteria of urban housing. Criteria of housing units
- Criteria of social and technical services for infrastructure
- Criteria of rural housing. Criteria of housing units
- Planning for housing complexes, size of a neighborhood, quarter, section, sector
- Reasons for the degradation of housing sections and units
- Housing renovation

Technologies adopted in housing projects

AE 504 SPECIFICATIONS & QUANTITIES

SEMESTER 2 - CLASS 5 - 2 CREDIT

The student is introduced to the different types of estimation and specification and various types of construction projects as well as the types of determining the quantities of works and units used. He is also acquainted with price analysis and the relation between the technical specification and drawings. Different construction contractions are presented and discussed. All this information is considered basic requirements related to professional practice.

Syllabus

Weeks	
1-3	1-General introduction to estimation and construction - Types of projects in construction works - Definition of estimation and the reason for its use - Approximate estimation and detailed estimation
4-6	

7-10 10-12 13-15	2-Quantities of building works and civil engineering - Tabulating work and method of measurement - Details of measuring work and work quantities. The units used 3-Estimation of cost and price of in-town work - Cost of the project at design stage - Contract price - Analysis of prices 4-Technical specifications for building work - Definition of "specifications" and the reason they are used - Relation between specification and charts - Preparing technical specification for a building 5-contract for building works and civil engineering - Opening and analyzing tenders - Preliminary and final deposits - Additional works

AE 505 Specialized Studies

SEMESTER 1 - CLASS 5 - 2 CREDIT

Workshops examination for each student thesis project in relation to the services systems standards. The design thesis a student selects requires that each student present a technical and well-prepared study. The thesis topic is determined by the available specialized academic staff and it usually falls within these topics: air-conditioning, heating system structures, computer application etc. The thesis topic varies from year to year depending on the specializations the department has.

Syllabus

Weeks 1-15	The subject requirements and marks are distributed as shown below Seminar (programmed according to the number of students during the first term 20% Requirements of feasibility of the thesis (The first part of the report) 20% Specialized requirements (According to a field to be set after discussion with group lead in terms of design thesis / preliminary presentation 20% Specialized requirements (Final presentation)

AE 506 Architectural Design

SEMESTER 1 - CLASS 5 - 10 CREDIT

The aspects emphasized in this subject are as shown below

1- For the student to develop the ability to evaluate production criteria , measures and restrictions which play a role in building within advanced technological context as well as the framework of laws and regulations governing obvious buildingparts
2- For the student to develop the ability to select building materials and combine them to cover complicated building programs. He will be able to express this aspect in writing or graphically
3- For the student to understand the connection between construction elements and various systems used in the proposed solution and their effect on the method of construction and execution and the way to coordinate between elements and regulations
4- For the student to understand the performance of building materials and the method of connecting them as far as technical and construction performance are concerned and their effect on separating internal environment from external surroundings.

For the student to understand the alternative and new technologies which affect the different stages of design

Description	
Weeks	This subject includes one design exercise based on pre-fabricated building and one spontaneous exercise The lectures are delivered by team lead or by specialists in pre-fabricated building. They will be as shown below
1	1- The technical standards, measures and restrictions
2	2- Method of production and its relation to building materials
3	3- Pre-fabricated building materials and method s of their production
4	4- Environmental effects, specifications of materials insulating te inside of the building from the outside
5	5- Alternative materials and partially pre-fabricated building materials 6- Services within Pre-fabricated building
6 7	7- Relation between production, method of construction and site requirements 8- Architectural details
8-10	9- Requirement of repair and maintenance during use

The research period, presentation requirements and marks are distributed as shown below

- Technical study 10%
- Main design solution 20%
- Detailed design 45%
- Design solution and representation 10%

AE 507 Thesis Design	
SEMESTER 2 - CLASS 5 - 16 CREDIT	
The design thesis is intended to test the student performance in this part of his/ her architectural education which covers the previous parts of his/ her architectural education thus the thesis reflects a summary of the general aim of the education which is an integrated process requiring the designer to define the problem and offer alternatives and select the solution and the manner to express the decision so as to make a professional performance acceptable in the field of practice	
Syllabus	
Weeks	Marks and assessment of the are as shown below
1-3	Site analysis and design idea 10%
4-6	Preliminary design 10%
6-9	A study on the third dimension 15%
	The last presentation which covers
9-15	A- Design 40%
9-15	B- Details 15%
9-12	C- The report 10%
	Total 100%

Summary of courses hours for five year's study

	First Semester		Second Semester		Total of Hours for Class		Credit
	Theoretical	Practical	Theoretical	Practical	Theoretical	Practical	
First year	240	180	195	210	435	390	41
Second year	135	270	195	225	330	495	36
Third year	195	225	210	225	405	450	40
Fourth year	180	225	180	225	360	450	38
Fifth year	75	330	210	180	285	510	35
Sub Total	825	1230	990	1065	1815	2295	190
Total Courses Hours	2055		2055		4110		
Final Total	4110						