Study Plan in the Department of Architecture

University of Technology

1997-2002

First Year

Symbol	Subject	First Semester Weekly Hours			Second Semester Weekly Hours			Units
		Theoretical	Practical	Discussion	Theoretical	Practical	Discussion	
AE 101	National Studies	2	-	-	2	-	-	4
AE 102	Statistics & Computers	1	1	-	1	1	-	3
AE 103	Mathematics	2	-	1	2	-	1	4
AE 104	Building Physics	2	-	-	2	-	-	4
AE 105	Workshops	-	6	-	-	6	-	4
AE 106	Architecture Appreciation	2	-	-	2	-	-	4
AE 107	Freehand Drawing	1	2	-	1	2	-	4
AE 108	Architectural Design	2	5	-	2	5	-	9
AE 109	Building Construction	2	-	-	2	-	-	4
AE 110	Architectural Drawing & Descriptive Geometry	1	1	-	1	1	-	3
Total		15	15		15	15		43
		31			31			

Second Year

Symbol	Subject	First Semester Weekly Hours			Second Semester Weekly Hours			Units
		Theoretical	Practical	Discussion	Theoretical	Practical	Discussion	
AE 201	National Studies	2	-	-	2	-	-	4
AE 202	Computer Aided Design	1	2	-	1	2	-	4
AE 203	Structure	2	-	1	2	-	1	4
AE 204	Architectural Design Methodology	2	-	-	2	-	-	4
AE 205	History of Architecture	2	-	-	2	-	-	4
AE 206	Freehand Drawing	-	2	-	-	2	-	2
AE 207	Architectural Design	1	7	-	1	7	-	9
AE 208	Architectural Presentation	1	2	-	1	2	-	4
AE 209	Building Construction	1	2	1	1	2	1	4
AE 210	Surveying	1	1	-	-	-	-	1
Total		13	16	2	12	15	2	40
		31			29			

Third Year

Symbol	Subject	First Semester Weekly Hours			Second Semester Weekly Hours			Units
		Theoretical	Practical	Discussion	Theoretical	Practical	Discussion	
AE 301	National Studies	2	-	-	2	-	-	4
AE 302	Computer Aided Design	-	2	-	-	2	-	2
AE 303	Structural Design	2	-	-	2	-	-	4
AE 304	Architectural Theories	2	-	-	2	-	-	4
AE 305	History of Architecture	2	-	-	2	-	-	4
AE 306	Building Services	2	-	-	2	-	-	4
AE 307	Architectural Design	2	8	-	2	8	-	12
AE 308	Building Construction	1	2	1	1	2	1	4
AE 309	Architecture & Environment	2	-	-	2	-	-	4
Total		15	12	1	15	12	1	42
		28			28			

Fourth Year

Symbol	Subject	First Semester Weekly Hours			Second Semester Weekly Hours			Units
		Theoretical	Practical	Discussion	Theoretical	Practical	Discussion	
AE 401	Housing & Planning	2	-	-	2	-	-	4
AE 402	Islamic Architecture	2	-	-	2	-	-	4
AE 403	Urban Design Theories	2	-	-	2	-	-	4
AE 404	Architectural Theories	2	-	-	2	-	-	4
AE 405	Programming Theories	1	1	-	1	1	-	3
AE 406	Building Services	1	1	-	-	-	-	2
AE 407	Architectural Design	2	8	-	2	8	-	12
AE 408	Advanced Building Technology	1	1	-	1	1	-	3
AE 409	Interior Design	1	3	-	-	-	-	2
AE 410	Landscape Design	-	-	-	1	3	-	2
Total		14	14		14	14		40
		28			28			

Fifth Year

Symbol	Subject	First Semester Weekly Hours			Second Semester Weekly Hours			Units
		Theoretical	Practical	Discussion	Theoretical	Practical	Discussion	
AE 501	Management & Professional Practice	-	-	-	2	-	-	2
AE 502	Building Regulation	-	-	-	2	-	-	2
AE 503	Specifications & quantities	2	-	-	-	-	-	2
AE 504	Scientific Research Methodology	1	2	-	-	-	-	2
AE 505	Theories of Architecture Criticism	-	-	-	2	-	-	2
AE 506	Philosophy & Architecture	-	-	-	2	-	-	2
AE 507	Design Thesis	4	15	-	1	7	-	16
AE 508	Design Details	1	4	-	1	12	-	10
		8	12		10	19		
Total		29			29			38

Description Subjects of Curriculum

1997-2002

FIRST YEAR

AE 101 National Studies
Semester 1&2 – (2 hours theoretical / week) Annual
The material of this subject is central. *The aim of this course is to discuss social culture and political relevant to history of national and Arab affairs.* *(Description from 1987-1992 curriculum)*

AE 102 Statistics & Computers	
Semester 1&2 – (1 hour theoretical + 1 hour practical / week) Annual	
Weeks	First Semester
1	Introduction to computers and modern uses.
2	Software — basic, calculation operations.
3	Computer features.
4	Numerical system (binary, decimal, octagonal) & conversation.
5	Computer components and parts attached to it.
6	Memory and its types.
7-8	Programming languages (definition of its types).
9-10	The definition of essential programs (translator, operating systems, services & applications).
11	Problems analysis & logarithm.
12-15	Basic language components and commands with various programs for each command & application.
	Second Semester
16-17	Introduction and definition of statistics and statistical subdivisions with definitions of terms.
18	Scientific codes, associatively and arithmetic's.
19	Distributions.
20	Arithmetic mean.
21	Geometric mean.
22	Differing mean.
23	Square root mean, Intermediary method.
24	Dispersion standards.
25	Range, average deviation, standard deviation, standard grade.
26	Correlation and regression.
27	Extension coefficient, standard estimation error, harmonic analysis, correlation coefficient.
28-30	Statistical software application on computer.

AE 103 Mathematics
Semester 1&2 – (2 hours theoretical + 1 hour discussion / week) Annual
1. Function Variation.
2. Differentiation geometry and its applications.
3. Methods of integration and applications on the selected integration.
4. Vector and their applications.
5. Planes & surface equations.

AE 104 Building Physics	
Semester 1&2 (2 hours theoretical / week) Annual	
Weeks	First Semester
1-2	Elasticity.
3-4	Elements of heat transfer.
5-7	Light and illumination.
8-11	Principles of sound and noise, waves, vibration and acoustic of building.
12-15	Elements of Climates: 1- Global climate factors. 2- Classification of tropical climates. 3- Site climates.
	Second Semester
16-18	Principles of thermal design
	• Thermal quantities • Heat exchange of buildings • Periodic heat flow
21-22	Effecting factors on the thermal environment of building
23-24	Natural design of building
25	Means of thermal control
26-28	Mechanical control Structural control Ventilation air movement
29-30	Revision

AE 104 Workshops
Semester 1&2 (6 hours Practical /week) Annual
Assigning 18 hours for each workshop at the university to practice practical exercises in each. *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* *(Description from 1987-1992 curriculum)*

AE 106 Architectural Appreciation
Semester 1&2 (2 hours theoretical / week) Annual
1- Design elements (line, direction, shape, dimension, texture, value, etc). 2- Design principles • Forms of relations between design elements: gradient, contrast and unity in design. 3- Tests of distinction and artistic taste. 4- Analysis of the design elements. 5- Architectural Design: • The usual cases in architectural design. • Shape, its elements and standards. • Architectural formation. • Structural formation. • Architectural space design. • Design concept. 6- Architect in design work: suitability, positional, artistic beauty 7- Design basis and drawings.

AE 107 Freehand Drawing	
Semester 1&2 (2 hours practical / week) Annual	
Weeks	First Semester
1-2	Fundamentals of freehand drawing, tools and materials.
3-4	Drawing models of geometric forms, the theory of perspective.
5-6	Drawing furniture (chair, table ...etc).
7-8	Drawing a model composed of several item (wood, metal...etc).
9-10	Drawing static life (pottery, trees, flowers...etc).
11	Shadow and light and how to use a pencil in this aspect.
12-15	Drawing outside the studio for architectural elements, trees, Stairs, material, historical and local buildings.
	Second Semester
16-17	The human body, its movements and ratios.
18-20	Drawing geometric forms using ink.
23-24	Drawing shapes needed by the student in the presentation (car, signs…etc).
25-26	Drawing multi-story buildings with different techniques.
27-28	Introduction to color study, its importance and presentation methods.
29-30	Drawing geometric shapes in colors.

AE 108 Architectural Design	
Semester 1&2 (2 hours theoretical + 5 hours practical / week) Annual	
Weeks	First Semester
1-2	Fundamental design terms and engineering tools - with exercises.
3-9	Two dimensional designs with exercises in the studio. Lectures on design principles and graphic technique.
10-15	Solid mass, space and form - addition, subdivision and abstraction - with exercises.
	Second Semester
16-18	Human scale – with exercises
19-20	Relationship between spaces and connection techniques – with exercises.
21-22	Isometric + Econometric - with exercise.
23-24	Design by abstraction.
25-27	Architectural design and colors - with exercises
28-30	Function and its relationship to architectural forms and design - with exercises.

AE 109 Building Construction
Semester 1&2 (2 hrs Theoretical/week) Annual
Engineering symbols and signals.
Building parts, fundamental physical elements and the impact of the effective forces in construction.
Foundation types.
Bricks: type of Bricks and building with bricks.
Stone, types of stone, its uses.
Concrete blocks: their types and their uses in construction.
Concrete: components and their uses
Mortar: Importance and types.
Suture: its importance and types.
Brief about supplementary elements in buildings (doors, windows, stairs, bridges).
Standard details used in steel construction.

AE 110 Architecture Drawing and Descriptive Geometry	
Semester 1&2 (1 hr Theoretical + 1 hr Practical / Week) Annual	
16	Definitions, point in space, and its three projections.
17-19	Straight line, its status in space, finding the real length and inclination angels, and specifying its two projections with the real length data, vertical and horizontal coordinates & inclination angels - with various applications.
20-24	Levels, their positions, types, angels of inclination, and finding their impact from angles data, vertical, horizontal and side coordinates data. The intersection of levels, vertical, diagonal and assistance levels.
25-27	Models as surfaces – their analysis to points and surfaces.
28-30	The intersection between models and surfaces with applications to find the assistant vertical and horizontal projection.

SECOND YEAR

AE 201 National Studies
Semester 1&2 – (2 hours theoretical / week) Annual
The material of this subject is central. *The aim of this course is to discuss social culture and political relevant to history of national and Arab affairs.* *(Description from 1987-1992 curriculum)*

AE 202 Computer Aided Design	
Semester 1&2 (1 hr. theoretical + 1 hr. Practical/ Week) Annual	
Weeks	First Semester
1-2	Definition of the program, two-dimensional drawing.
3-6	Drawings main commands.
7-9	Main Editing commands.
10-12	Program control commands (enlarge the screen, font type, etc.)
13	Text commands.
14	Dimensions commands.
15	Exercises and Revision.
	Second Semester
16-19	Three-dimensional drawing lines and Axes in third dimension UCS
20-23	Alteration and manipulating axes.
24	Drawing three-dimensional lines.
25	Drawing three-dimensional surfaces.
26-30	Drawing three-dimensional object.

AE 203 Structure	
Semester 1&2 (2 hrs. theoretical + 1 hr. Discussion/ Week) Annual	
Weeks	First Semester
1	Geometric mechanic - Introduction.
2	Forces and their effects.
3-5	Resultant.
6-8	Trusses.
9-12	Internal forces in structures.
13-15	Bending moments and shear forces schemes.
	Second Semester
16	Resistant material- Introduction.
17-20	Bending moments, shear forces and axial forces schemes.
21	Stress - Introduction
22-24	Moment stress.
25-26	Shear stress.
27	Axial stress.
28	Elongation in axially loaded structures.
29-30	Deformation in structures.

AE 204 Architecture Design Methodology	
Semester 1&2 (2 hrs. theoretical/Week) Annual	
Weeks	First Semester
1	Definition of methodology terms.
2	Preliminary principles for the design process and taste with different trends in design.
3	Applications to a project prepared by the student in the architectural design class with exposure to analysis, developing conceptual plan and special design standards.
4-8	General Analysis – functional, symbolic, and conclusions.
9-10	Special Analysis.
11-13	Composition and composition bases after determining the elements possibilities.
14-15	Basics of the design based on the design criteria initiated in the beginning.
	Second Semester
16-19	Methods of architectural design-intuitive approach-objective approach.
20-23	Preliminary principles for the design process and differences with the different trends of the applications to a project designed by the student in the architectural design class with exposure to analysis, developing a conceptual plan and special design standards.
24-26	General analysis application.
27	Special analysis application.
28	Applications of composition Basics.
29-30	Applications of design basics based on methodological techniques.

AE 205 History of Architecture
Semester 1&2 (2 hrs. Theoretical/Week) Annual
1- History of Architecture – Introduction.
2- Mesopotamia Architecture - Prehistoric, Sumerians, Akkadian, Babylonian and Assyrians.
3- Architecture of the adjacent areas of Mesopotamia.
4- Nile Valley Architecture - cities, castles, temples and cemeteries.
5- Greek Architecture - A.D., Hellenic and Hellenistic periods.
6- Roman Architecture - construction technology and buildings types.

AE 206 Freehand Drawing	
Semester 1&2 (2 hrs. practical/Week) Annual	
Weeks	First Semester
1-2	Exercises with pencils and ink.
3	Color theory and the relationship between colors.
4-5	The color wheel and color blending.
6-10	Watercolors - geometric forms, buildings and complementary items.
11-13	Perspective, shade and shadows.
14-15	Drawing a watercolor perspective for architectural design class.
	Second Semester
16-18	Sketching by different techniques and colors (wood, coal...etc)
19-20	Sketching people, cars, trees…etc. with different methods.
21-23	Font types (Arabic, English).
21-26	An empirical study on script.
27-30	Detailed drawings with colors. And prepare the required drawing presentation for the architectural design class.

AE 207 Architectural Design
Semester 1&2 (1 hr. Theoretical+7 hrs. Practical/week) Annual.
This subject is taught through a combination of lectures and exercises that should cover the following aspects:
1- Introduce students to the methods of architectural design after the analysis and evaluation of the approved standards in making the design decision.
2- Site evaluation, pointing the items that would influence the design method & outcome.
3- Evaluating the impact of the physical and urban environment.
4- Absorbing the impact of structural solutions and services on the design.
5- Understanding the peculiarities of construction patterns and the methods to achieve this specificity.
6- Horizontal and vertical movement in buildings.
7- Expressing design ideas through drawings and studies pertaining to the approved exercises.

AE 208 Architecture Presentation	
Semester 1&2 (3 hrs. Practical/ Week) Annual	
Weeks	First Semester
1-4	Drawing elevations from plans using different presentation techniques.
5-6	Drawing shades and shadows using different presentation techniques.
7-9	Drawing two points perspective using different presentation techniques.
10-15	Different presentation exercises associated with the requirements of the architectural design course to draw perspective.
	Second Semester
16-22	Drawing one point perspective with exercises.
23-26	Different architectural presentation methods for design phases, including the preparation of the report.
27-30	Presentation exercises associated with the architectural design course.

AE 209 Building Construction
Semester 1&2 (1 hr. Theoretical+2 hrs. Practical+1 hr. Discussion / week) Annual
1- The concept of architectural construction- constructed building and its components.
2- Influence of site and soil components, shape of the building & structure frame.
3- Constructional systems for Buildings.
4- Foundations, walls, ceilings & floors.
5- Means of vertical transportation in the constructed building.
6- Complementary elements of the constructed building.
7- Type of joints.
8- Application in Detailed drawings.

AE 210 Surveying	
Semester 1 (1 hr. Theoretical+ 1 hr. Practical / week)	
Weeks	First Semester
1-2	Survey types, measurements, units & scales.
3	Measuring horizontal distances, dimensional measuring devices.
4	Surveying using the level panel - parts, uses, its advantages and disadvantages.
5	Leveling device, setting up the device, difference between two points.
6-7	Preference leveling methods, ascending and descending methods.
8-10	Sections (longitudinal and lateral) and contour maps.
11-12	Angles, trends and types, calculating trends to calculate the coordinates.
13-14	Theodolite types and uses to read vertical and horizontal angles.
15	Parcel subdivision.

THIRD YEAR

AE 301 National Studies
Semester 1&2 – (2 hours theoretical / week) Annual
The material of this subject is central. *The aim of this course is to discuss social culture and political relevant to history of national and Arab affairs.* *(Description from 1987-1992 curriculum)*

AE 302 Computer Aided Design	
Semester 1&2 (2 hrs. Practical/week) Annual	
Weeks	First Semester
1-2	Spreadsheets – Definition.
3	The use of the program and entering information.
4	Writing equations and recurrence.
5-7	Downloading and converting the forms of writing and drawings.
8-9	Fast drawing.
10-11	Drawings modification.
12-15	Statistical process.
	Second Semester
16-17	Distribution of information (Data distribution & Histogram).
18	Advanced drawings process.
19-24	Providing information – Presentation.
25-26	Creating drawing sections.
27-28	Databases.
29-30	Linear Programming - Operations Research.

AE 303 Structural Design	
Semester 1&2 (2 hrs. Theoretical/ week) Annual	
Weeks	First Semester
1	Indeterminate structures.
2-3	Using tables for Indeterminate structures.
4	Introduction to concrete.
5	Cement industry.
6	Properties of sand and gravel used in concrete work.
7-15	Concrete beams design.
	Second Semester
16-17	Example of concrete beams design in buildings.
18-19	Concrete tiles design in buildings / Introduction.
20-24	Concrete tiles design in buildings in one direction.
25-27	Concrete columns design.
28-30	Concrete foundation design.

AE 304 Architectural Theories
Semester 1&2 (2 hrs. Theoretical/ week) Annual
This subject Aims to clarify the following: 1. Different types of design process and how this relates to the different architectural trends. 2. Nature and objectives of the design by analysis procedures (Symbolic, functional, site) composition and evaluation.

AE 305 History of Architecture
Semester 1&2 (2 hrs. Theoretical/ week) Annual
1. Early Christian Architecture. 2. Byzantine Architecture and Byzantine domes and churches. 3. Gothic Architecture - characteristics of gothic churches. 4. Renaissance Architecture - City planning. 5. Baroque and Rococo Architecture.

AE 306 Building Services	
Semester 1&2 (2 hrs. Theoretical/ week) Annual	
1-3	Sanitary services and its requirements.
4-5	Types of sewer systems inside the building and sewer system design.
6	Sewage collection systems inside and outside the building.
7-8	Devices and equipments necessary for sanitary services.
8-12	Clean water services, grid design for cold water, drinking water and irrigation.
13-15	Hot water services - devices, grids and systems.
16	Environment and physical service requirements.
17	Comfort, its requirements and their relationship to function.
18-19	Heat Pumps.
20-22	Cooling systems.
23-24	Criteria for cooling systems selection for certain functions.
25	Air ducts.
26	Thermal Acquirement.
27-28	Heating and ventilation systems
29-30	Services equipments and environmental services requirements for a central air-conditioning.

AE 307 Architectural Design
Semester 1&2 (2 hrs. Theoretical + 8 hrs. practical/week) Annual
In the first semester, the student prepares two design projects. The first project deals with a variety of design problems in terms of, patterns of movement, respond to the different requirements that reflect the character of a building, within the site and the urban fabric. The second project expose the students to deal with the design in a steady way associated with the intellectual concepts, both in curriculum design or design solutions and analyze, evaluate and test their response to different requirements.
In the second semester, the student prepares another two projects of the same goals put forward in the first semester with other additions to reinforce the student expression, analysis and consciousness to the modern concepts (theoretical and practical).

AE 308 Building Construction
Semester 1&2 (1 hr. Theoretical + 2 hrs practical/ week) Annual
1- Preparation of architectural plans for a residential project.
2- Developing the initial concept. • Enlargement of architectural plans. scale 1:50 (horizontal and vertical sections and elevations) • Preparing architectural details using the appropriate scale. • Preparing structural plans and details for the project. • Preparing sanitary plans and details for the project. • Preparing electrical and mechanical plans for the project.
Note: This is done by giving the construction document concepts within the theoretical framework and adopting it within a practical framework.
3- Preparing architectural plans for a multi-purpose hall.
4- Developing the project initial concept to the construction documents stage using the method adopted within the previous project (Steel structure system not to be used) starting the architectural and structural details within the steel structure system.
5- Theoretical and practical study for prefabricated buildings.

AE 309 Architecture & Environment	
Semester 1&2 (2 hrs. Theoretical / week) Annual	
Weeks	First Semester
1	Climatic environment.
2-3	Thermal comfort (influencing factors at thermal interaction between human and space).
4-5	Analysis of Iraq's climate and its impact on architecture
6-7	Engineering behavior of the movement of the sun around the buildings.
8-9	The theoretical basis for calculating the sun spots inside the building.
10-11	The practical basis for calculating the sun spots inside the building.
12-13	The theoretical and practical basis to calculate the size of the solar shades.
14-15	Selection of the solar force of the slots and methods of control.
	Second Semester
16-17	Selection of appropriate geometric ratios to reduce thermal heat.
18-19	Heat exchange in buildings, structures and calculating the amount of solar heat, thermal leakage and time-delay.
20-21	Natural ventilation.
22-23	The movement of wind around buildings.
24-25	The design of the windows and other elements as a part of the air ventilation system.
26-27	Climate characteristics for traditional houses.
28-30	The basis and principles of the design of climate responsive building.

FOURTH YEAR

AE 401 Housing & Planning
Semester 1&2 (1hr Theoretical + 1 hr. Practical / week) Annual
1. Introduction to housing — residential land and methods to provide it. 2. Planning patterns for housing units. 3. The neighborhood unit theory. Those theoretical subjects are associated with practical aspects in design course.

AE 402 Islamic Architecture
Semester 1&2 (2hrs. Theoretical / week) Annual
The characteristics of Islamic architecture and the influential factors. Islamic Architecture in the pre-Islamic period. Islamic Architecture in the advanced Islamic Era. Islamic Architecture in the Umayyad Era. Islamic Architecture in the Abbasid Era. Islamic Architecture of Al-Andalus. Islamic Architecture in the Mughal, Fatimid and Mamluks Era. Islamic Architecture in the Ottoman Era.

AE 403 Urban Design Theories	
Semester 1&2 (2hr Theoretical / Week) Annual	
Weeks	First Semester
1	General Definitions: Urban Planning, Urban Design, Urban Dictation, Human Scale.
2	The collapse of the urban concepts of modern architecture.
3-5	The shift in urban trends for the period 1960-1980 (post modern architecture) 1. The impact of Collage City Theory. 2. Urban design contextual trends- rationalists effect 3. The concept of the urban stereotype – rationalists' effect. 4. The concept of sense of place and the concept of the city memory.
6-8	Urban transformations towards the progressive design (Piece meal Ds.) Instead of overall planning and strategies to achieve them. 1. Diversity within unity. 2. Dividing and articulation. 3. Human Scale.
9-10	Similarities and differences in cultural concepts for each of the new local architecture with post-modern architecture.
11-14	Urban trends change in Deconstruction Architecture.

	1. The general ideology of the movement and affected intellectual assets. 2. Urban orientation toward contact and the removal of the urban context. 3. The movement urban strategies - Relationship between the building and the urban context, and the relationship between building and human scale.
15	Similarities and differences in urban trends between Folding Architecture and Deconstruction Architecture The idea of urban transformation of Folding Architecture.
	Second Semester
16	Classification of urban theories according to the intellectual approach, which starts from Structuralism and its applications in various fields.
17-20	Application of Structuralism in Urban Theories. 1. Space syntax theory — Bill Hillier.
21	2. Timeless architecture and pattern language — Alexander.
22	3. Urban stereotypes and the concept of the urban context – Rationalists.
23	Phenomenological approach and its applications in urban theories.
24	Phenomenological approach applications in urban theories: 1. Kevin Lynch's theory Image of the City.
25-27	2. Existential space theory and the concept of Genius Loci Nor berg Schulz.
28	Psychological analysis and its impact on urban theory
29	1. Defensible space theory - Newman
30	2. Behavior Settings Ecological Psychology - Barker

AE 404 Architectural Theories
Semester 1&2 (2hrs. theoretical / week) Annual
1. Revival Architecture trends (18-19 century) 2. Changes that accompanied and led to the emergence of modern architecture. 3. Ideas and crises of modern architecture. 4. Postmodernism trends and architecture strategies. 5. Late modern architecture trends and strategies. 6. Deconstruction architecture and its concepts and strategies.

AE 405 Programming Theories	
Semester 1&2 (1 hr. theoretical + 1. hr. practical week) Annual	
Week	First Semester
1-2	Programming methods and its relationship to function.
3-5	Programming and Architectural Design Methodology.
6-9	Specializing in satellite programming methods.
10-11	Flexibility in programming.
12-13	Future expansion.
14-15	Exercises & discussion.
	Second Semester
16-18	Criteria for selection the project thesis.
19-20	Definition of projects and challenging goals.
21-22	Determine the components of the project.
23-24	Identification and analysis of the site.
25-26	Area schedule for major spaces in the project.
27-30	Complete analysis of the space program, the conceptual plan and functional requirements.

AE 406 Buildings Services	
Semester 1 (1 hr. theoretical + 1 hr. practical / week)	
Weeks	First Semester
1	Means of vertical transportation in multi-story buildings.
2	Means of transportation, types and basis of selection.
3	Integration of transportation systems and auxiliary services.
4-5	Elevators calculations & means of operation.
6	Waste collection requirements.
7-8	Waste collection systems in multi-storey buildings and their specifications.
10-11	Electrical services requirements – definitions. Electrical service coordination with the architectural design.
12-13	Electrical services symbols, electrical services specialized construction.
14-15	Fire-control systems, building codes and means of egress.

AE 407 Architectural Design
Semester 1&2 (2hr. theoretical + 8hr. practical / week) Annual
The student prepares at least two projects, the second related to urban design. Exercises mainly aim to: 1. Studying the major influences of the urban fabric on the designer and the design. 2. Studying the urban aspects of the site and analyzing the results of the study. 3. Studying the patterns of the functions and their relationship with the masses within the multi-functionality. 4. Absorbent of the impact of the structural disciplines on the architectural design. 5. Linking the theoretical side in urban design with design in respect to preservation, rehabilitation and redevelopment. 6. Understanding the complex design problems and their methods of analysis, evaluating the alternatives solutions and decision-making in an integrated methodology.

AE 408 Advanced Building Technology	
Semester 1&2 (1 hr. theoretical + 1 hr. practical / week) Annual	
1-2	Introductions to advanced concrete structures and pre-tensioned structures.
3-6	Pre-tensioned bridges design.
7-10	Precast concrete.
11	Steel structure design.
12-15	Pre-fabricated Frames and structures design.
16-17	The concept of construction system and the emergence of the modular system.
18	Structural Systems in traditional buildings.
19	Construction ratios in architecture and relation to technology.
20-22	Manufacturing & Architecture, technical developments (theory and practice).
23	Modular Design.
24	Basis & Principles of Modular systems.
25-26	Modular Dimensions (limited dimensions, manufacturing dimensions, prototype, schematic modular & multiplier modular)
27	Manufactured Modular & Structural Components
28-30	Classification of construction systems & Data systems

AE 409 Interior Design	
Semester 1 (1 hr. Theoretical + 3 hrs. Practical/ week)	
This subject is linked to practical relationship with the Architecture Design subject.	
Week	First Semester
1-3	The concept of interior design, color, lighting, interior finishing materials.
4	Furniture.
5-6	Addressing the openings & additional interior designs.
7-8	Interior Design Theories & Interior Design Stages.
9-10	Addressing the environment and its impact on the design.
11	Indoor plants, shade plants, interior design works.
12-15	Project integrated design for indoor spaces.

AE 410 Landscape Design	
Semester 2 (1 hr. Theoretical + 3 hrs. Practical/ week)	
This subject is linked to practical relationship with the Architecture Design subject.	
Week	Second Semester
16-17	The principles and foundations of design, aesthetic elements in the outer spaces.
18-19	Site design requirements, climatic, functional & sensory
20-21	Design elements for external spaces 1. Natural elements (plants, water, soil, climate) 2. Artificial elements (finishing material, furniture ...)
22-23	Design details for elements used in external spaces design
24-26	Study examples for external spaces designs throughout history and civilizations.
27-30	Studies and designs of external spaces with details.

FIFTH YEAR

AE 501 Management & Professional Practice	
Semester 2 (2 hrs. Theoretical/ week)	
Week	Second Semester
16-17	Engineering Management, privacy of procedural projects and control methods.
18-20	Business programming techniques (linear, retinal charts).
21	Planning with advanced assessment and program review (pert)
22	Analysis of project costs and quality control.
23	Fees and Engineering contract.
24-25	Programming of fees, material supplies, humans & budget.
26-27	General conditions of contracting. Types of construction.
28	Tasks entrusted to consultative works.
29-30	Financial management of the office and the project.

AE 502 Building Regulation	
Semester 2 (2 hrs. Theoretical/ week)	
Week	Second Semester
16	Introduction to international & local building codes.
17-19	Durability and structural stability requirements.
20	Building and construction fire safety requirements.
21-22	Means of egress, fire fighting and escape.
23-24	Safety requirements in buildings and sites.
25	Public health requirements.
26	Indoor environments requirements.
27-28	Planning, dividing and roads laws.
29-30	Applications and field study.

AE 503 Specifications and Quantities
Semester 1 (2 hrs. Theoretical/ week)
• Importance of estimate and general definitions. • Various types of estimation. • Calculation of quantities & units. • Methods of preparing quantities schedule. • Detailed cost calculations to implement all items (materials & labor). • Contract Documents. • Technical specifications – Importance – methods to prepare and uses.

AE 504 Scientific Research Methodology	
Semester 1 (1 hr. Theoretical + 2 hrs. Practical / week)	
Week	First Semester
1	Types of basic resources + types of information that research deals with.
2-4	Relationship between the research process and architectural design with a focus on the properties of the research process & architectural design.
5-6	The principles and foundations of logic and conclusion.
7-8	The process of scientific research structure.
9	Theories and hypotheses, law and intuition.
10	Theories and hypotheses.
11-12	Research Strategy and methods.
13-14	Measurement and levels.
15	Revision, The application of the aspects that the student learns in this subject in the design thesis project report.

AE 505 Theories of Architecture Criticism
Semester 2 (2 hrs. Theoretical/ week)
1. Types of architecture criticism. 2. Basis of criticism process. 3. Entries & trends of criticism studies in 20th century. 4. Criticism conceptions / classical, real, romantical and symbolic. 5. Significant methods in 20th century criticism. 6. Form & content in modern criticism.

AE 506 Philosophy and Architecture
Semester 2 (2 hrs. Theoretical/ week)
• General Definitions for Philosophy and Thought. • Thought and its impact on architecture as a phenomenon. • Essence and appearance (of symptoms) and their applications in architecture system and its applications in architecture. • The theory of correlation and concordance. • Architectural and philosophical concepts of its assets in accordance with the correlation and concordance theory.

AE 507 Design Thesis	
Semester 1 (2 hrs. Theoretical + 17 hrs. Practical/ week) Semester 2 (1 hr. Theoretical + 7 hrs. Practical/ week)	
This subject aims to make the student demonstrates an integrated project to show that he absorb all aspects of the study.	
Week	First Semester
1-3	Preparation for the seminar.
4	The seminar.
5-7	Preliminary design and defining a strategy for solutions.
8-9	Preliminary design.
10-11	Elevations design.
12	Sections design.
13-15	Semi-final design
	Second Semester
16-23	Studying the semi-final design in respect to the design changes resulting from the design details subject.
24	Prepare the thesis report for final submittal.
25-30	Final submittal and examination.

AE 508 Design Details	
Semester 1 (1 hr. theoretical + 4 hrs. practical / week) Semester 2 (1 hr. theoretical + 12 hrs. practical / week)	
Week	First Semester
1-4	Preparation of the details elements and the specialized studies to be presented with the seminar thesis.
5-10	Studying the design concept, the design and implementation methods and its evaluation and the use of the specialized studies as an important indicator in the design.
11-13	Preparation of the preliminary drawings pertaining to the details and the preparation of a preliminary report on the specialized study.
14-15	Submitting a preliminary report on the specialized study and discuss it.
	Second Semester
16-24	Completion of the preliminary drawings after development in accordance with the design requirements and the other requirements (construction, service, etc).
25-30	Completion and submittal of details drawings before the design thesis exam.

Appendix A:

Note that 2003 - fifth year curriculum had the following changes:

1. *"AE 505 Theories of Architecture Criticism" was replaced with the following course:*

Symbol	*Subject*	*First Semester*			*Second Semester*			*Units*
		Theoretical	*Practical*	*Discussion*	*Theoretical*	*Practical*	*Discussion*	
AE 505	*Engineering Management*	*2*	*-*	*-*	*-*	*-*	*-*	*2*

2. *The following 2 courses were added to the curriculum:*

Symbol	*Subject*	*First Semester*			*Second Semester*			*Units*
		Theoretical	*Practical*	*Discussion*	*Theoretical*	*Practical*	*Discussion*	
AE 509	*Contemporary Arabic Architecture*	*2*	*-*	*-*	*-*	*-*	*-*	*4*
AE 510	*Contemporary Iraqian Architecture*	*-*	*-*	*-*	*2*	*-*	*-*	*2*

Description Subjects of 2003 – Fifth Year Curriculum

Reference: Study Plan 2003 – 2007

AE 505 Engineering Management	
Semester 1 (2 hr. Theoretical / week)	
Week	First Semester
1-4	Engineering management, privacy of procedural project & control methods.
5-7	Business programming methods (liner, charts).
8-9	Planning by the method of assessing progress and review program (PERT).
10-12	Analysis of project costs and quality control.
13-14	Programming fees, human and material requirements and budget.
15	Examination.

AE 509 Contemporary Arabic Architecture	
Semester 1 (2 hr. Theoretical / week)	
Week	First Semester
1	Contemporary Arabic Architecture.
2	Architectural Heritage and the impact of general concepts.
3-5	Contemporary Arabic Architecture and Identity.
6-8	Identity and originality.
9	Identity and the other.
10	Identity and Globalization.
11-12	Contemporary Arabic Architecture and uniqueness.
13-14	Methodology in contemporary Arabic Architecture.
15	An empirical study and discussion.

AE 510 Contemporary Iraqian Architecture	
Semester 2 (2 hr. Theoretical +week)	
Week	Second Semester
16-18	The foundation of intellectual and philosophical concepts of the contemporary Iraqi architecture.
19-20	External influence and local emergence.
21-25	The emergence of contemporary Iraqi Architecture. Foreign Architecture.
26-27	Contemporary Iraqi school through the proposals of Iraqi intellectuals.
28-29	An empirical study and discussion.
30	Examination.