



جامعة الموصل
كلية الهندسة
قسم هندسة العمارة

مفردات المناهج للدراسة الأولية



العام الدراسي 2021-2020

المستوي الاول - الفصل الاول (الخريفي) - العام الدراسي 2021/2020

الرمز	المقرر الممهد	الوحدة الدراسية	ساعات الاسبوع		اسم المقرر		نوع المتطلب	
			عملي	نظري	باللغة الانكليزية	باللغة العربية		
UOMC101		3		3	English Language	اللغة الانكليزية	جامعة	مقررات اساسية
UOMC102		3	2	2	Computer	الحاسوب		
ENGC121		3	2	2	Calculus (1)	الرياضيات (1)	كلية	
ENGC123		1	3		Engineering Drawing	الرسم الهندسي		
ARC 141		4	8	1	Architectural Design (1)	التصميم المعماري(1)	قسم	
ARC 142		2	2	1	Freehand Drawing	الرسم اليدوي		
ARC 143		1		1	Art and Architecture	الفن والعمارة		
		17	17	10			المجموع	
		17 Credits						
							جامعة	مقررات اختيارية
							كلية	
ARC 161		2	2	1	Applied Arts	الفنون التطبيقية	قسم	
ARC 162		2	2	1	Model Workshop	ورشة مجسمات		
		4	4	2			المجموع	
		4 Credits						
		19 Credits					المجموع الكلي	

Note: Each students must take at least 2 elective credits hours.

University of Mosul

College of Engineering

Department of Architecture



Course Title: Architectural design (1)

Course Number/Type: ARC 141 Core

Credit Hours: 4

(1 Theoretical and 8 laboratory h/week)

Level/Term: 1st level / Fall

Prerequisites: None

Course Description:

This course aims to teach students the basic principles of architectural design and presentation through introduces the student to methods of graphic representation essential to design professionals in the built environment. Design representation is taught both as a craft and as a method of thinking. Types of representation include freehand drawing (drawing from observation and from the imagination); analytic diagramming (the two-dimensional representation of an idea or process); illustration graphics (symbolic representation), and technical drafting (conventions of plan, section, elevation and axonometric). Students will be exposed to analog (pencil-and-paper) and digital tools. The method of instruction will emphasize application of representation skills in response to project assignments. The purpose of this course also is to provide students with the necessary scientific and logical justification for the studied architectural as well as the exercises on which they depend. General skills and other skills related to portability (Personal employment and development). Teamwork within the group. Personal development through ethical values in dealing with, and respect for the other opinion. Personal development through building the general and professional cultural background of the profession. Interaction with teaching staff as a guide educational and administrative educational process.

References:

- 1- **Form, Space, Francis Ching,**
- 2- **Introduction to Architecture Design, Francis ching**
- 3- **Pattern Language.**

Course Details:

Subject	Week
The definition of architecture and architectural education, in general, and the most important possibilities that must be available to the architectural student, from the possibility of drawing, imagining and understanding. The student's definition of basic drawing style, the style of drawing using them and the use of tools in the drawing of certain models and on a paper the size of A3 (vertical lines, horizontal, oblique, concentric circular shapes and so on	1

Submission	2
Identify the nature of the planes through the texture, Texture exercises the vertical and horizontal lines and the free manual drawing technique. Training the student through an intensive series of exercises on different font values using a pencil. Developing his expressive ability to draw tools, FreeHand to achieve various linear values. * Pencil exercises with different tools, changing the density of lines, degree of blackening of the pen, shapes of lines and directions ... etc.	3
Submission	4
Basic geometrical shapes and geometric derivations (square, circle, triangular, pentagonal, hexagonal and octagonal) and possible variations of geometric shapes, and then the use of these derivatives with simple geometric designs.	5
Submission	6
Definition of the basic principles of two-dimensional design 2D: the concept of composition, its elements, its basic principles, types of configurations ... Applied exercises ... Use the technique of output in collage to facilitate the clarification of the idea. The definition of design elements and the most important design principles of the two-dimensional configurations with exercises to analyze the two-dimensional configurations according to the geometric elements and design principles, as well as prepare a configurable form by the students.	7
Submission	8
Introducing Grid's importance in the organization and creation of two-dimensional formations by adopting geometric shapes as basic units in the formation of the configuration derived from the geometric grid.	9
The introduction of color as a new variable in the composition. Define the color and the color wheel and the color distribution and gradations, color theory and basic principles and the use of poster colors.	10
3D design combinations, the composition is built according to the basic design principles of pre-designed geometric units, and the identification of the design effects resulting from the use of the third dimension in architecture. Learn about the front and side projections of the three-dimensional designs and reflections on the way of showing.	11
Discussion – submission	12
Abstraction and color in dealing with volumetric formations, a real project that the student abstracts into its basic elements and then construct a new composition by reconstructing these elements in a short project through which the concepts that have been designed are applied.	13
The specific project with a 3D composition built from 3D geometric units.	14
Submission	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Engineering Drawing
Course Number/Type: ENGC123 Core
Credit Hours: 1
(1 lecture and 3 laboratory h/week)
Level/Term: 1st level / Fall
Prerequisites: None

Course Description:

يمتاز المقرر بأنه ينمي قدرة الطالب على فهم الاسقاط الهندسي وانواعه وكيفية استخدام المقاييس وتعلم اساسيات الرسم الهندسي ضمن البعد الثاني والثالث ، بالاضافة الى تدريب الطالب على المهارات اليدوية في استخدام الادوات الهندسية

References:

1. Engineering Graphic/ Frederick Gerek, Alva Mitchell. (2014).
2. Engineering Drawing / N. D. Bhatt (2012).
3. Engineering Drawing (Geometric Drawing)/ P.S. Gill (2013).
4. Engineering Graphic/ Shiv Kumar. (2016).
5. Engineering Drawing /S.R. Singhal & O.P. Saxena. (2013).
6. Engineering Drawing / Loop Lai, Ramakant Rana. (2015).

Course Details:

Subject	Week
Tools of Engineering Drawing	1
Lettering/ Practices	2
Geometric Constructions (Bisecting a line and an Angle) /Practices	3
/ Drawing of Polygons (Triangles-Pentagon-Hexagon-Octagon) Practices	4
Drawing Tangents/ Practices	5
Drawing Tangents/ Practices	6
Drawing of Ellipse/ Practices	7
1st term Exam	8
Projection Drawings/ Practices	9
Types of Projections (Paralleled Projection)/ Practices	10
Multiview Projection (Orthogonal)/ Practices	11
/ Multiview Projection (Orthogonal)- Principals of Dimensions Practices	12
2nd term Exam	13
Isometric Drawing/ Practices	14
الامتحان النهائي	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Freehand Drawing

Course Number/Type: ARC 142 Core

Credit Hours: 2

(1 Theoretical and 2 laboratory h/week)

Level/Term: 1st level / Fall

Prerequisites: None

Course Description:

Usually there is theoretical introductory for the way and technique that adopted to draw the subject (model) and later the student began, the master continues to give his notes and correction about student painting through the lecture.

Refernces:

- 1-Drawing – a creative process, Francis D. K. Ching , john Wiley & sons , inc. , 1990**
- 2-Drawing outdoor, Henry C. Pitz , Watson- Guptill publications , 1965 , New York**
- 3-How to paint and draw, Bodo W. Jaxtheimer, Thames and Hudson, 1962, London.**
- 4-Watercolor technique, Rex Brandt, sixth edition, Reinhold publishing corporation, 1963**

Course Details:

Subject	Week
Introductory test to know the student aptitude	1
Simple model consist of cubes – stage 1	2
Simple model consist of cubes – stage 2	3
Advance model consist of cubes – stage 1	4
Advance model consist of cubes – stage 2	5
Simple model consist of circle shapes & cylinders – Stage 1	6
Simple model consist of circle shapes & cylinders – Stage 2	7
Simple model consist of oblique cubes – stage 1	8
Simple model consist of oblique cubes – stage 2	9
Simple model consist of glass bottles – stage 1	10
Simple model consist of glass bottles – stage 2	11
Simple model consist of irregular forms	12
Simple model consist of irregular forms	13
Advance model consist of irregular forms	14
Advance model consist of irregular forms	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Art & Architecture

Course Number/Type: ARC 143 Core

Credit Hours: 1 (1 Theoretical h/week)

Level/Term: 1st level / Fall

Prerequisites: None

Course Description:

The subject is mostly theoretical. This course Concentrating on the different types of compositions which express design unity, Aesthetic judgment and taste tests, Analysis of mass and space, and also the principles of special organization, Analysis of constructional design and materials, Definition of architectural idea, style and creativity, presentation of the most important trends and movements in art and architecture with analysis of the works of pioneers.

References:

- 1- Architecture, Form, Space and Order / Francis Ching/1996
- 2- The Art of Color and Design / Maitland Graves/1951
- 3- Launching Imagination / Mary Stewart/2006
- 4- 1985/ مبادئ في الفن والعمارة /شيرين احسان شيرزاد/

Course Details:

Subject	Week
Definition of architecture and architect's work, also the relations between architecture and other sciences	1
Elements of design and their application in art and architecture. Basic elements of form (point, line ,plane, volume).	2
Principles of design and their applications in art and architecture,(identically ,similarity, contrast, Gradation, dominance, Balance, unity).	3
Analysis of design elements (line, direction, volume) and their application in art and architecture	4
Architectural form. Characteristics of form	5
Ratio and proportion, golden mean	6
Texture, value, color.	7
Term Exam 1s	8
Architectural composition, types of geometric forms' connections, articulation of forms and corners and their application in art and architecture	9
Architectural design's items (shape and types of shapes, human scale).	10
Constructional compositions and materials.	11
Space and spatial organizations.	12
Elements defining space, Exterior and interior space.	13
Idea and style in architectural design. Architectural styles of pioneers.	14
Term Exam 2nd	15

University of Mosul
College of Engineering
Department:
Architectural



Course Title: Applied Arts
Course Number/Type: ARC 161
 Elective
Credit Hours: 2
 (1 Theoretical and 2 laboratory h/week)
Level/Term: 1st level / Fall
Prerequisites: None

Course Description:

Definitions of all kinds of arts specially the applied arts, and their characteristics which distinguished from the fine arts, and take design elements definition. Also lectures clarify the most important movements in art like the classic and modern arts through history. They also clarify the arts & architecture relationship with human civilizations. There are 4 practical exercises within the course.

References:

- 1- Graves, Maitland: "The Art of Color and Design".
- 2- Rasmussen, S. Eller: "Experiencing Architecture".

Course Details:

Subject	Week
Introduction to Applied Arts.	1
Modern & ancient definitions of arts.	2
Exe.1: Three dimensional spatial configuration Using chopsticks.	3
Design principles, formal analysis of natural elements	4
Exe.2: Three dimensional spatial configuration With the application of design principles (Sculpture configuration).	5
Color theories and applications in design	6
Exe.3: Use colors and gradients	7
Golden Ratio.	8
Exe.4: Golden Ratio Exercise	9
Spatial Relation and its Applications	10
Exe.5: Geometric Shapes with Spatial Relation	11
Introduction to decoration	12
Islamic Decoration.	13
Exe.6: Islamic Decoration.	14
Submission	15

University of Mosul
College of Engineering

Department:
Architectural



Course Title: Model Workshop
Course Number/Type: ARC162
 Elective
Credit Hours: 2
 (1 lecture and 2 laboratory h/week)
Level/Term: 1st level / Fall
Prerequisites: None

Course Description:

Definition of the architectural model, and uses of the architectural model, and knowing the materials used to make architectural models and the characteristics of each material, and learning methods of creating three-dimensional models (cubes, pyramids, spherical model, cylindrical shape, ...), and take design elements definition. Also lectures clarify the The golden ratio, Uses of the golden ratio, and the concept of color, the psychological effects of color. There are 4 practical exercises.

Refernces:

- 1- Form, Space, Francis Ching,
- 2- Introduction to Architecture Design, Francis ching
- 3- Pattern Language.

Course Details:

Subject	Week
Definition of the architectural model, Uses of the architectural model	1
Knowing the materials used to make architectural models and the characteristics of each material	2
Exe.1: creating an architectural composition by recycling the materials available at home.	3
Distinguishing between materials and when they are used in architectural models.	4
Distinguish between the types of cutters and adhesives, Determine the risks and degree of safety of shear tools according to the quality.	5
Maintenance of tools and devices used in the work of architectural models.	6
Methods of creating three-dimensional models, How to create 3D cubes.	7
Exe.2: Make cubes with different dimensions.	8

Methods of creating three-dimensional models, How to create a pyramid model, How to create a spherical model, How to create a cylindrical shape.	9
Design Elements, Architectural design principles	10
Exe.3: Make a cartoon model, using the principles of design in composition.	11
The golden ratio, Uses of the golden ratio	12
Exe.4: The work of a three-dimensional formation in which the principles of the golden ratio are clarified and the formation is within the measures of the golden ratio using (squares, rectangles, circles, triangles, ...etc).	13
Color (concepts and properties), The concept of color	14
Color plans (color systems), The psychological effects of color	15

المستوى الدراسي (الاول) - الفصل الثاني (الخريفي) - العام الدراسي 2021/2020								
الرمز	الممهد ان وجد	عدد الوحدات	عدد الساعات العملية	عدد الساعات النظرية	نوع المقرر	اسم المقرر		نوع المتطلب
						باللغة العربية	باللغة الانكليزية	
UOMC100		2		2	اجباري	Arabic Language	اللغة العربية	متطلبات الجامعة
UOMC103		2		2	اجباري	Rights and Freedoms	حقوق وحرريات	
ENGC122	الرياضيات(1)	3	2	2	اجباري	Calculus(2)	الرياضيات(2)	متطلبات الكلية
ENGC124	الرسم الهندسي	1	3		اجباري	Computer Aided Drawing	الرسم بمساعدة الحاسوب	
ENGE133		2		2	اجباري	Physics	الفيزياء	
ENGE135		2	2	1	اجباري	Engineering Workshop	الورشة الهندسية	
ARC 144	التصميم المعماري (1)	4	8	1	اجباري	Architectural Design(2)	التصميم المعماري (2)	متطلبات القسم
ARC 145		2	2	1	اجباري	Architectural Drawing	الرسم المعماري	
ARC 146		2	2	1	اجباري	Building Construction(1)	تركيب المباني (1)	
		20	19	12				المجموع
مجموع وحدات الفصل الثاني : 20 وحدة اجباري : 20 وحدة اختياري : صفر								

University of Mosul

College of Engineering

Department: Architectural



Course Title: Architectural design (2)

Course Number/Type: ARC144 Core

Credit Hours: 4

(1 lecture and 8 laboratory h/week)

Level/Term: 1st level / Spring

Prerequisites: Architectural design (1)

Course Description:

This course aims to teach students the basic principles of architectural design and presentation through introduces the student to methods of graphic representation essential to design professionals in the built environment. Design representation is taught both as a craft and as a method of thinking. Types of representation include freehand drawing (drawing from observation and from the imagination); analytic diagramming (the two-dimensional representation of an idea or process); illustration graphics (symbolic representation), and technical drafting (conventions of plan, section, elevation and axonometric). Students will be exposed to analog (pencil-and-paper) and digital tools. The method of instruction will emphasize application of representation skills in response to project assignments. The purpose of this course also is to provide students with the necessary scientific and logical justification for the studied architectural as well as the exercises on which they depend. General skills and other skills related to portability (Personal employment and development). Teamwork within the group. Personal development through ethical values in dealing with, and respect for the other opinion. Personal development through building the general and professional cultural background of the profession. Interaction with teaching staff as a guide educational and administrative educational process.

Refernces:

- 1- Form, Space, Francis Ching,
- 2- Introduction to Architecture Design, Francis Ching
- 3- Pattern Language.

Course Details:

Subject	Week
Human Scale: Standardization and study of the reality of the activities position, a study of the chosen space and its standard dimensions. It represents the joint between the abstract state and other values in architecture. Understand the concept and its applications and distinguish between the scale in the residential building and public building .	1
Submission	2

Study the space or place to perform the effectiveness according to the human scale, recognition of standard dimensions Standard for the space of activities and furniture required for each of the basic human activities of sleep, food, living and kitchen, the use of expressive expressions of those furniture and the absorption of their sizes in relation to the human.	3
Homework	4
Application through a realistic study of interior space, design development with a focus on studying space, functional and expressive requirements of it, the introduction of color and texture, a study of furniture and others.	5
Homework	6
Definition of the style of presentation facades and sections and show the architectural project integrated based on the elements and principles of design at the level of the configurations of three dimensions, and the volume and mass configuration of the basic human functions and studio apartment for one person.	7
Premier Submission	8
The specific project of housing unit (studio) for one person and with multi-function.	9
Discussion	10
Discussion	11
Discussion , Pre-final submission	12
Final submission	13
Recognition of the method of abstraction, integration, and overlay in the design of the stable volumetric formations through a short project depends on one of the light buildings with a visual character, for example, designs for external elements such as fountains, monuments, bus stations, stalls ... etc	14
Submission	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Architectural Drawing
Course Number/Type: ARC145 Core
Credit Hours: 2
(1 lecture and 2 laboratory h/week)
Level/Term: 1st level / Spring
Prerequisites: None

Course Description:

Architectural Drawing is language of architects and designers to create 2D and 3D of their work by relying on hand skills in the use of engineering tools and knowledge of architectural symbols. In this course, students will be taught basic architectural drawing, tools, scale, horizontal view, elevations, sections, doors, windows, stairs, and dimensions. In addition, they will be learning how to draw Isometric & Axonometric for the project.

References:

- 1- Jefferis, A. & Madsen, D. (1996). Architectural Drafting and Design. New York.
- 2-Dernie, D. (2014). Architectural Drawing. Laurence King Publishing, London.

Course Details:

Subject	Week
Drawing Scale, Architectural Tools	1
Alphabet of lines, Architectural Symbols & Terminology	2
Architectural Engineering Projection (Orthogonal) of Horizontal Plan	3
Architectural Engineering Projection (Orthogonal) of Horizontal Plan	4
Architectural Drawing of Elevations	5
Architectural Drawing of Sections	6
Architectural Drawing of Sections	7
Writing of Dimensions on the Horizontal Plan	8
Drawing of Stairs	9
1st term Exam	10
Axonometric & Isometric Projection	11
Isometric Projection	12
Circles Drawing in Isometric	13
Curves Drawing in Isometric	14
2nd term Exam	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Buildings Construction (1)

Course Number/Type: ARC146 Core

Credit Hours: 2

(1 lecture and 2 laboratory h/week)

Level/Term: 1st level / Spring

Prerequisites: None

Course Description:	
This course aims at understanding alternative structural systems, relevant construction systems, building materials, building components, The Stages of the construction of the building.	
Refernces:	
1- Building Constructions- By Zuhair M. Saco 2- Building Constructions, Walls and It's Details – By Anees Juaad 3- Civil Engineering for Architects (Poland)	
Course Details:	
Subject	Week
An Introduction about building materials and The Stages of the construction of the building , and the components of the building (foundations- Walls- roofs- floors)	1
Construction materials (Brick), building by Brick , constructional Symbols, (Home work)	2
Stone, Types of stones, building by stone, Gypsum. (H.W.)	3
Types of cement and Its properties. Concrete, Types of concrete and Its properties, Concrete components. (Quiz1)	4
A visit to a laboratories and sites under construction, (Report)	5
Light and hollow Concrete and Thermal stone, industry, components, properties, uses. (H.W.)	6
Steel, Aluminum, Plastic materials	7
Term Exam 1st	8
Foundations, and walls (H.W.)	9
Roofs and Floors (H.W.)	10
Vertical circulation elements (Stairs, Ramps, Escalators ,Lifts) (H.W.)	11
Openings (Doors and windows) (Quiz 2)	12
Finishing and Insulation Materials	13
A visit to sites under construction, (Report)	14
Term Exam 2nd	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Computer Aided Drawing

Course Number/Type: ENGC124 Core

Credit Hours: 1

(1 lecture and 3 laboratory h/week)

Level/Term: 1st level / Spring

Prerequisites: ENGC123 Engineering Drawing

Course Description:

Computer Aided Drawing is a scientific course with theoretical and practical parts, concerned with providing specialized information in the field of graphic computer software related to engineering and architectural drawings, especially the AutoCAD software.

The approach of the course is based on explaining the details of the drawing process and the use of the program in sequential and interrelated stages, enabling the user to use the commands gradually, according to the degree of importance of the order, its level of complexity, and the user's need for it according to the level of his capabilities and his ability of dealing with the details, orders and elements of the software.

References:

- 1- Al-Allaf, Emad Hani, Architectural and Computer Aided Engineering Drawing, 2D Drawing Principles in AutoCAD®, 2018.
- 2- AutoCAD 2018 في برنامج 2D® العلاف، عماد هاني، الرسم المعماري والهندسي بمساعدة الحاسوب، مبادئ الرسم

Course Details:

Subject	Week
AutoCAD software - user interface and initial drawing settings AutoCAD program interface elements Coordinate systems in the program Angle units in the program Drafting Settings: Grid, Snap, Ortho Set Drawing Limits Working with graphic files: <ul style="list-style-type: none">• Create a new file• Open previous file• Save the new file• Save another copy of the file - Save As• Import an Import file• Export an Export file	1

<p>Drawing Utilities graphic file services</p> <ul style="list-style-type: none"> • File Audit • File Recover • Remove unused items Purge • View the properties for the Drawing Properties graphic file <p>Exit the current file - Close</p> <p>Exit the program</p>	
<p>Advanced drawing aids and selection methods</p> <p>Object Snap</p> <p>General commands for Editing items</p> <ul style="list-style-type: none"> • Undo • Redo • Cut elements • Copy items • Copy objects with Base Point • Paste items • Paste the elements according to their original coordinate • Clear objects • Find Text Objects - Find <p>Visual handling of graphic elements and handling of multiple file windows</p> <ul style="list-style-type: none"> • Scene Redraw • Scene Regeneration - Regen • Zoom in and out • Scene Offset - Pan • Expand the Clean Screen drawing field <p>Modify the contents of the Toolbars</p> <p>Sort view of multiple files in Windows dropdown list</p> <ul style="list-style-type: none"> • Cascade arrangement • Tile Horizontal • Tile Vertical 	<p>2</p>
<p>Draw basic two-dimensional elements</p> <ul style="list-style-type: none"> • Line 	<p>3</p>

<ul style="list-style-type: none"> • Ray line • Construction Line • Multiline line • Polyline • Polygon • Rectangle shape • Arc • Circle • Donut • Spline • Ellipse 	
<p>Modify tools -first group</p> <ul style="list-style-type: none"> • Erase • Copy • Move • Mirror • Rotate • Scale • Offset • Rectangular and Polar Array 	4
<p>Modify tools - second group</p> <ul style="list-style-type: none"> • Properties • Match Properties • Stretch • Lengthen • Trim • Extend • Break • Join • Chamfer • Fillet • Explode 	5

<ul style="list-style-type: none"> • Align • Polyline Edit • Mline Edit 	
Application	6
1st term Exam	7
2D Drawing Commands – second group <ul style="list-style-type: none"> • Point • Modify Point Style • Divide • Measure • Hatch • Gradient • Region • Boundary • Text • Mtext 	8
Create Block Drawings Insert pre-made graphic blocks Insert a graphic source DWG Reference Insert bitmap image as an external Raster Image Reference External resource management - External reference Dealing with ready-made blocks in Tool Palettes	9
Layers and drawing element settings <ul style="list-style-type: none"> • Color • Linetype • Line Weight • Text Style 	10
Dimensions and measurements <ul style="list-style-type: none"> • Quick dimensions • Linear dimensions • Aligned dimensions • Measure the arc length • Ordinate coordinates 	11

<ul style="list-style-type: none"> • Polar and angular measurement group • Radius measurement • Jogged distant radius measurement • Diameter dimensions • Angular measure • Baseline dimensions • Continue dimensions • Multileader • Center mark • Jogged Linear • Oblique Measuring Lines • Align Text • Dimension Style 	
<p>Main tools</p> <ul style="list-style-type: none"> • Workspaces • Palettes • Design Center • Spelling correction • Quick Select • Draw Order format • Inquiry • Block Editor • Save the drawing area as a digital image • General program options - Options • Program Assistant from the Help dropdown menu • System Variables 	12
<p>Printing and output</p> <ul style="list-style-type: none"> • Introduction to switching from the Model mode to the Layout mode • Print command from the File dropdown menu 	13
<p>Application</p>	14
<p>2nd term Exam</p>	15

University of Mosul

College of Engineering

Department: Architectural



Course Title: Engineering Workshop
Course Number/Type: ENGC135 Core
Credit Hours: 2
(1 lecture and 2 laboratory h/week)
Level/Term: 1st level / Spring
Prerequisites: None

Course Description:

The engineering workshop introduces the student to the skills and crafts and dealing with different materials in different crafts and engineering workshops that integrate with the engineering work and get acquainted with the elements of traditional architecture in Mosul and the way to draw and configure them and the materials for implementation and crafts that embody them while learning the engineering basis for drawing the Islamic engineering motifs and the Kufic engineering line and insert it into

References:

- Pictures and documentary plans for the elements of traditional architecture in Mosul from the internet
- carpentry training manual

Course Details:

Subject	Week
Workshop drawing Vernacular Architecture Elements in Mosul	1
Workshop drawing Vernacular Architecture Elements - Doors and Gates	2
Workshop drawing Vernacular Architecture Elements - Circular Archs	3
Workshop drawing Vernacular Architecture Elements - Columns & hallway	4
Workshop drawing Vernacular Architecture Elements - Domes and Vaults	5
Environmental Building technologies Workshop	6
Local Building Materials in Vernacular Architecture in Mosul	7
Wall Building workshop with Local Materials and Technologies	8
Vaults Building workshop with Local Materials and Technologies	9
Domes Building workshop with Local Materials and Technologies	10
Gypsum Engraving Workshop	11
Gypsum Engraving Workshop	12
Islamic Geometric Pattern Workshop	13
Islamic Geometric Pattern Workshop	14
Mosaic Workshop - Kufic Geometric Calligraphy	15

المستوى الدراسي الثاني (الفصل الاول) الربيعي – العام الدراسي 2021/2020

الرمز	المعهد ان وجد	عدد الوحدات	عدد الساعات العملية	عدد الساعات النظرية	نوع المقرر	اسم المقرر		نوع المتطلب
						باللغة العربية	باللغة الانكليزية	
		1		1	اجباري	English Language- Pre Intermediate	اللغة الانكليزية- ما قبل المتوسط	متطلبات الجامعة
UOME		2		2	اختياري	Environmental Pollution	التلوث البيئي	
ENGC227	الرياضيات (1) و (2)	2		2	اجباري	Statistics	الاحصاء	متطلبات الكلية
ARC 241	التصميم المعماري(2)	5	8	1	اجباري	Architectural Design (3)	التصميم المعماري (3)	متطلبات القسم
ARC 242		2	2	1	اجباري	Architectural Presentation and Perspective	الرسم والاطهار المعماري	
ARC 243	تركيب المباني(1)	2	2	1	اجباري	Building Construction (2)	تركيب المباني (2)	
ARC 244		2	2	1	اجباري	Engineering Mechanics	الميكانيك الهندسي	
ARC 245		2	2	1	اجباري	Surveying	المساحة	
ARC 261		2	2	1	اختياري	Construction Materials Laboratory	مختبر فحص المواد الانشائية	
مجموع وحدات الفصل الاول : 18 وحدة / الاجباري : 16 وحدة / الاختياري : 2 وحدة								

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Department of Architecture



Course Title: Architectural Design (3)

Course Number/Type: ARC 241/ Core

Credit Hours: 5

(1 Theoretical and 8 Practical h/week)

Level/Term: 2nd level / Fall

Prerequisites: Architectural Design (2)

Course Description:

Theoretical part: Introduction, Primary Elements, Visual proportion of form, Primary shapes, Platonic solid, Regular and irregular forms, Transformation of form, Additive forms, Formal collisions of geometry, Articulation of form, Defining space with horizontal & vertical elements, Closure, Qualities of Architectural Space, Openings in space / Lighting, Spatial Relationships, Spatial Organizations, Circulation, Proportion and Scale, Practice/ Preliminary Presentation Ordering Principles, Practice/ Development

References:

Architecture, form space & order by Francis D. K. Ching

Methods of systematic analysis of design in architecture, By D. Mohamed A. Shihab

Course Details:

Subject	Week
General Introduction	1
Definition and characteristics of the design process	2
The design problematic and how to define it using architectural graphics and drawings	3
Analysis as an interpreting tool clarifying the problem in relation to the composition	4
Analysis using matrices	5
architectural spaces adjacency criteria	6
Day sketch	7
Synthesis – representing matrices using geometrical shapes (the bubble diagram)	8
Synthesis – Zoning	9
Architectural form and its types	10
Interlocking architectural forms	11
Interlocking architectural forms	12
Treatment of architectural form	13
Solid and void	14
Horizontal and vertical elements defining space	15

University of Mosul
 College of Engineering
 Department of Architecture



Course Title: Buildings Construction (2)
Course Number/Type: ARC 243- Core
Credit Hours: 2
 (1 Theoretical and 2 Practical hours/week)
Level/Term: 2nd level / Fall
Prerequisites: Buildings Construction (1)

Course Description:

This course initially the basic principles of construction elements constituting architectural spaces and other associate systems common to construction. It introduces students to the various construction phases from concrete foundation to finishing. The course also includes a study of the design and implementation criteria relevant to construction of walls, ceilings, staircases, flooring, insulation and finishing material. Students will be provided with of practical application on vertical and horizontal installation models. (In bearing wall system)

References:

1. 198 (تركيب المباني نظام الجدران الحاملة وتفصيلها المعمارية), انيس جواد, الجامعة التكنولوجية,
2. Ching F." Building Construction" illustrated Wiley 2008 4th ed.
3. Building Construction, Barry vol. 3 1997

Course Details:

Subject	Week
Site Safety	1
General introduction of buildings construction	2
Arrangement of built process	3
Construction systems and building division	4
Construction in Bearing wall sys. Advantage& disadvantage	5
Sequences works construction in Bearing wall sys.	6
Foundations ----- insulation horizontal layer instates Materials , properties and kinds	7
Insulation material (Foundations stages)	8
1st term Exam	9
Bearing wall built ----- Parapet built	10
Opens building (Windows)	11
Opens building (Doors)	12
Insulation material roof finishes	13
Floors finishes ----- remove worst builder	14
1st term Exam	15

University of Mosul

College of Engineering

Department of Architecture



Course Title: Engineering Mechanics
Course Number/Type: ARC 244- Core
Credit Hours: 2
(1 Theoretical and 2 Practical h/week)
Level/Term: 2nd level / Fall
Prerequisites: None

Course Description:

This course covers the resultant of concurrent and non-concurrent force systems, equilibrium of force systems, analysis of trusses, center and moment of inertia of composite areas.

References:

1-Engineering Mechanics by F.L. Singer
2-Static and Strength of Materials for Architecture and Building Costruction by Barry Onouye and Kevin Kane.

Course Details:

Subject	Week
Resultant of Force Systems.	1
Resultant of Concurrent Force Systems.	2
Moment of Force, Couple.	3
Resultant of Non-Concurrent Force Systems.	4
Equilibrium of Force Systems	5
Equations of Equilibrium of Concurrent Force Systems.	6
Free Body Diagram, Types of Supports, Types of Loadings.	7
Equations of Equilibrium of Non-Concurrent Force Systems.	8
Analysis of Trusses	9
Method of Joints.	10
Method of Section.	11
Centroids and Centers of Areas.	12
Centroids of Composite Figures.	13
Moments of inertia.	14
Moments of Inertia of Composite Figures.	15

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Course Title: Architectural Presentation and Perspective

Course Number/Type: ARC 242-Core

Credit Hours: 2

(1 Theoretical and 2 Practical hours/week)

Level/Term: 2nd level / Fall

Prerequisites: None

Course Description:

The course introduces students to the fundamental principles of architectural drawings of both perspective and shadows.

References:

كتاب منهجي : الظل المنظور -- لمؤلفه عماد أزهر البكري

Architectural Graphics by Ching, 1996

Course Details:

Subject	Week
The principles of perspective drawing of cubical forms using rays method.	1
Drawing perspective of stairs and sloping surfaces using rays method.	2
The principles of perspective drawing using measuring points method.	3
Drawing perspective for architectural composition using rays method.	4
The principles of perspective drawing using a circle of vision.	5
Drawing perspective for circle and cylinder using a circle of vision.	6
The principles of one-point perspective drawing.	7
Mid-term exam	8
The principles of drawing shades and shadows for isometric and orthogonal projections of cubical forms	9
Drawing shades and shadows for isometric and orthogonal projections of stairs	10
Drawing shades and shadows for isometric and orthogonal projections of inclined surfaces	11
Drawing shades and shadows for balconies and openings	12
Drawing shades and shadows for circles and cylinders	13
Drawing shades and shadows for architectural composition	14
Final Exam	15

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Department of Architecture



Course Title: Surveying
Course Number/Type: ARC 245-Core
Credit Hours: 2
 (1 Theoretical and 2 Practical hours/week)
Level/Term: 2nd level / Fall
Prerequisites: None

Course Description:

The course gives fundamentals of plane surveying and an introduction to mapping science for architects. Topics covered include leveling, together with its field procedure and applications, computation of areas and earth volumes. Computation and determination of point coordinates are also covered through studying methods for horizontal distance measurement, traversing, including its theory, applications, and adjustment. An introduction to photogrammetry is also included. In addition, the course sheds some light on computer aided surveying techniques.

References:

يوسف صيام (1997) , المساحة بالأجهزة الالكترونية , الجامعة الاردنية , عمان , الاردن.
 محمود حسني عبد الرحيم & محمد رشاد الدين مصطفى حسين (1984) المساحة التفصيلية والطوبوغرافية , الجزء الاول , دار الراتب الجامعية , بيروت لبنان.
 علي شكري , محمود حسني عبدالرحيم & محمد رشاد الدين مصطفى (1999) , المساحة المستوية : طرق الرفع والتوقيع , منشآت المعارف بالإسكندرية , مصر .
 أنور سيالة & مفتاح دخيل (1999) مقدمة علم المساحة , المكتب الجامعي الحديث , الازارطة , الاسكندرية.
 Barry F. Kavanagh (Surveying): with construction application. 3rd edition, Printice Hall, New Jersey, U.S.A.
 Barry F. Kavanagh (Surveying): with construction application. 3rd edition, Printice Hall, New Jersey, U.S.A.
 7. James Rewashing & Roy H. Wirsching (1985) Theory and Problems of Introductory Surveying, Schumm s Outline Series, McGraw-Hill.

Course Details:

Subject	Week
Introduction, basic parts of surveying	1
Drawing scale	2
Methods of distance measuring on plain surface	3
Chain surveying	4
Recognizes mistakes and faults in measurements	5
Leveling (leveling instrument)	6
Longitudinal and cross section	7
Contour lines	8
Drawing of topographic maps	9
Theodolite, total station	10
Measurement of angles	11

Traversing	12
Site planning to set up triangulation operation	13
Calculate Area and volumetric quantity	14
Compute quantity by using different methods	15
Course Description: Practical part	
Subject	Week
1- Knows about Laboratory Of Surveying.	1
2 Knows how to organize a Field Book	
3-Apply distance measuring by foot and tape.	2
4- Drawing to various scales.	
5- Use a tape to measure angles	3
6- Undertake a survey by tape and draw a map.	
7-Practice distance measuring on level and sloping ground	4
8- Draw area surveyed.	
9- Knows types of leveling instrument used.	5
10- Knows sources of error in a level survey.	6
11- Reduces levels by height of instrument method.	
12- Reduces levels by rise and fall method.	7
13- Understands instrument adjustment.	
14- Survey and draws a cross-section.	8
15- Draws the longitudinal and cross sections, construction lines and side slopes.	9
16- Computes the area and volumes by squares.	10
17- Prepares maps of contour lines from survey data	
18- Measurements and calculations procedure to make maps by using electronically instruments.	11
19- Measurements internal angle of triangular network with side of length not less than 100 meter.	12
20- Calculates angle corrections for triangulation network.	13
21- Calculate of complete rotational vectors and side length coordinates for variable triangulation network.	14
22- Undertake Site Training on triangulation(example on rectangle shape)	15

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Course Title: Construction Materials
Laboratory

Course Number/Type: ARC 261-Core

Credit Hours: 2

(1 Theoretical and 2 Practical h/week)

Level/Term: 2nd level / Fall

Prerequisites: None

Course Description:

Mechanical Properties of construction materials, including composition, specification, and experimental test of building materials.

References:

Varghese P.C. (2015). Building Materials Paperback, second edition, Prentice Hall India Learning Private Limited; 283 pp.

American Society for Testing and Materials (ASTM)

British Standards (BS)

Iraqi Standard Specifications

Course Details: This course deals with the composition, specifications, and uses of construction materials. This study supports by experimental tests of building materials.

Subject: Theoretical Part

	Week
Introduction of Concrete, composition and properties	1
Portland cement, types of cement according to the ASTM specifications	2
Chemical composition of cement	3
Physical properties of Portland cement, consistency of cement and setting time, False and Flash set of Portland cement	4
Heat of hydration and min. w/c ratio for full hydration, Soundness of cement	5
Fine and course aggregates properties	6
Mid Term Exam	7
Sieve analysis of aggregate, Max. Agg. Size, Fineness Modulus, Average Sieve Size	8
Combined Aggregate analysis, Alkali-reaction aggregate	9
Aggregate air voids and solid contents	10
Reinforcement steel, production, behavior of stress-strain curve	11
Concrete bloks, types, production, and physical properties	12
Clay bricks, types, production, and physical properties	13
Thermistone, types, production, and physical properties	14
Tiles, types, production, and physical properties	15

Subject: Practical Part	Week
Writing a good technical report	1
Tests for ordinary portland cement (Normal consistency)	2
Tests for ordinary portland cement (Setting time)	3
Tests for ordinary portland cement (Compressive strength and effect of curing conditions on strength)	4
Tests for ordinary portland cement (Tensile strength)	5
Sieve analysis of coarse aggregates	6
Sieve analysis of fine aggregates	7
Midterm exam	8
<u>Tests for aggregates</u> - Specific gravity - Unit weight	9
<u>Tests for aggregates</u> - Moisture content	10
<u>Tests for aggregates</u> - Absorption	11
Tests for clay and concrete blocks	12
Tests for tiles	13
Tensile test and modulus of elasticity for steel	14
Final Exam	15

المستوى الدراسي الثاني (الفصل الثاني) الخريفي - العام الدراسي 2021/2020								
الرمز	المعهد ان وجد	عدد الوحدات	عدد الساعات العملية	عدد الساعات النظرية	نوع المقرر	اسم المقرر		نوع المتطلب
						باللغة الانكليزية	باللغة العربية	
UOME		2		2	اختياري	Information Technology	تقنيات المعلومات	متطلبات الجامعة
ENGE229		2		2	اجباري	Puplic Safty	السلامة العامة	متطلبات الكلية
ARC 246	التصميم المعماري(3)	5	8	1	اجباري	Architectural Design (4)	التصميم المعماري(4)	متطلبات القسم
ARC 247	تركيب المباني(2)	2	2	1	اجباري	Building Construction (3)	تركيب المباني (3)	
ARC 248		2		2	اجباري	History of Architecture (1)	تاريخ العمارة (1)	
ARC 249	الميكانيك الهندسي	2	2	1	اجباري	Strength of Material	مقاومة المواد	
ARC 250		2	2	1	اجباري	Computer Aided Architectural Drawing	الرسم المعماري بمساعدة الحاسوب	
ARC 262		2	2	1	اختياري	Architectural Documentation	التوثيق المعماري	
ARC 263		2		2	اختياري	Architecture and Human Science	العمارة والعلوم الانسانية	
ARC 264		2		2	اختياري	Islamic Arts	الفنون الاسلامية	

مجموع وحدات الفصل الثاني : 19 وحدة / الاجباري : 15 وحدة / الاختياري : 4 وحدة

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Course Title: Architectural Design (4)
Course Number/Type: ARC 246- Core
Credit Hours: 5
 (1 Theoretical and 8 Practical h/week)
Level/Term: 2nd level / Spring
Prerequisites: Architectural Design (3)

Course Description:

Theoretical part: Introduction, Primary Elements, Visual proportion of form, Primary shapes, Platonic solid, Regular and irregular forms, Transformation of form, Additive forms, Formal collisions of geometry, Articulation of form, Defining space with horizontal & vertical elements, Closure, Qualities of Architectural Space, Openings in space / Lighting, Spatial Relationships, Spatial Organizations, Circulation, Proportion and Scale, Practice/ Preliminary Presentation Ordering Principles, Practice/ Development

References:

- 8- Architecture, form space & order by Francis D. K. Ching
- 9- Methods of systematic analysis of design in architecture, By D. Mohamed A. Shihab

Course Details:

Subject	Week
Enclosure	1
Day sketch	2
Openings	3
Spatial relationships	4
Types of spatial organization	5
Movement – accessibility	6
Day sketch	7
Movement patterns ,Entrances	8
Scale	9
Proportion	10
Ordering principles/ Axes,	11
Hierarchy, datum	12
Symmetry and dominance	13
Rhythm, repetition	14
Rendering and final submission	15

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Course Title: Buildings Construction (3)

Course Number/Type: ARC 247- Core

Credit Hours: 2

(1 Theoretical and 2 Practical h/week)

Level/Term: 2nd level / Spring

Prerequisites: Buildings Construction (2)

Course Description:

This course initially the basic principles of construction elements constituting architectural spaces and other associate systems common to construction. It introduces students to the various construction phases from concrete foundation to finishing. The course also includes a study of the design and implementation criteria relevant to construction of walls, ceilings, staircases, flooring, insulation and finishing material.

References:

1. 1987. تركيب المباني (البناء الهيكلي وتفصيله المعمارية)
 2. 1998. رأفت, علي الأبداع الانشائي , مرآز ابحاث انتركونسلت , الجيزة
 3. Building Construction vol. 3 1997
 4. Building Construction vol. 5 1997
 5. Ching F." Building Construction" illustrated Wiley 2008 4th ed.
 6. Working drawing handbook
 7. Foster Jack Stroud "Structure and Fabric" part 2 Bats ford academic, London 1985
- <http://www.greatbuildings.com/>, <https://www.vitruvio.ch/>, <https://www.bluffton.edu/~sullivanm/>,
[https:// en.structurae.de/structures/](https://en.structurae.de/structures/)

Course Details:

Subject	Week
Skeleton build system advantage and disadvantage	1
Elements of skeleton building	2
Kinds of construction grid	3
kinds of columns /kinds of girder	4
Foundations in skeleton building	5
Roofs and Floors concrete slab	6
Precast buildings system introduction	7
Precast buildings systems main elements	8
precast Roofs floors concrete (1)	9
precast Roofs floors concrete (2)	10
Vertical communication elements 1 type of stairs	11
2 elevators	12
3 escalators	13
Chimneys	14
theoretical test	15

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Department of Architecture



Course Title: History of Architecture(1)

Course Number/Type: ARC 248- Core

Credit Hours: 2 (2 Theoretical h/week)

Level/Term: 2nd level / Spring

Prerequisites: None

Course Description:

The Course Deals with the evolution of architecture in Iraq in the ancient times and architecture in the Arab countries (Egypt) and neighboring countries (Greece) and to clarify the effects of mutual design among them.

References:

- سليمان ,عامر "العراق في التاريخ القديم " . موجز التاريخ الحضاري , (بغداد , 1983)
- Mallowan, M.E.” Nimrud and its remains”.2Vols.(London.1958).
- Lehner, Mark, “The complete pyramids”, 1997 Thames and Hudson Ltd. London
- Fletcher, Banister, “A history of Architecture on the comparative method “,1930

Course Details:

Subject	Week
Iraq's ancient architecture - the general characteristics-Sumerian cities	1
Sumerian architecture (temples and palaces architecture)	2
Architecture of the ancient Babylonian (temples and palaces architecture)	3
Assyrian architecture - the general characteristics	4
Assyrian architecture (temples architecture)	5
Assyrian architecture (palaces architecture)	6
Babylonian modern architecture (cities, temples and palaces)	7
Mid-term exam	8
Ancient Egyptian architecture - the general characteristics	9
Ancient Egyptian architecture –Egyptian Colums	10
Ancient Egyptian architecture –temples	11
Ancient Egyptian architecture –The funereal Architecture (pyramids)(tombs carved in the mountains)	12
Greek Architecture – The general characteristics-Orders	13
Greek Architecture –Buildings	14
Final Exam	15

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 College of Engineering
 Department of Architecture



Course Title: Strength of Materials
Course Number/Type: ARC 249- Core
Credit Hours: 2
 (1 Theoretical and 2 Practical h/week)
Level/Term: 2nd level / Spring
Prerequisites: Engineering Mechanics

Course Description:

This course covers the analysis of internal forces and moments in bodies, simple stresses and simple strains in structural elements, shear and moment in beams, analysis of rigid frames, shear force and bending moment diagrams in beams and rigid frames.

References:

- 1- Strength of Materials by F.L. Singer
- 2- Statics and Strength of Materials for Architecture and Building Construction by Barry Onouye and Kevin Kane.

Course Details:

Subject	Week
Simple Stresses	1
Axial Stress, Shearing Stress.	2
Bearing Stress.	3
Simple Strain	4
Stress-Strain Diagram.	5
Hook's Law.	6
Shear and Moment in Beam.	7
Shear Force Diagram, Bending Moment Diagram.	8
Semi-Graphical Method.	9
Stresses in Beams.	10
Flexural Formula.	11
Maximum Bending Stresses.	12
Analysis of Rigid Frames.	13
Axial Force, Shear Force and Bending Moment in Rigid Frames.	14
Shear Force Diagram and Bending Moment Diagram for Rigid Frames.	15

University of Mosul
College of Engineering
Department of Architecture



Course Title: Islamic Arts
Course Number/Type: ARC 264- Elective
Credit Hours: 2 (2 Theoretical h/week)
Level/Term: 2nd level / Spring
Prerequisties: None

Course Description:

Art is a language used by man to express what is in his essential self. There is a set of intellectual principles in the Islamic faith that accommodate the principles of Islamic arts. And this was evident in the design and creation of a collection of architectural and sculptural masterpieces. Art appeared in the Islamic world, providing a stylistic unity. It was the use of a common style of writing, decoration, engineering and wall decorations.

Refernces:

In Islamic Arts by Zaki Muhammad Hassan

Course Details:

Subject	Week
Defining Islamic Art, The importance of Islamic art	1
History of Islamic Art, The genesis of Islamic art	2
Characteristics of Islamic art	3
Intellectual principles of Islamic arts	4
Attributes of Islamic Art	5
Philosophy of Islamic art	6
Term exam. 1	7
Islamic art techniques	8
Types of Islamic art	9
Types of Islamic Applied Arts	10
Calligraphy	11
Literary and literary arts	12
Term exam. 2	13
Islamic Decoration	14
Application of Islamic arts in Islamic architecture	15

University of Mosul

College of Engineering

Department of Architecture



Course Title: Architectural Documentation

Course Number/Type: ARC 262- Elective

Credit Hours: 2

(1 Theoretical and 2 Practical h/week)

Level/Term: 2nd level / Spring

Prerequisites: None

Course Description:

Architectural documentation is a scientific course with theoretical and practical parts, concerned with providing and analyzing information specialized in the field of urban conservation, especially the techniques and technologies of architectural documentation of historical buildings and the built environment. The semester establishes for fundamental base for the conservation and documentation processes, and provides the ability to use different techniques and tools for this purpose.

References:

- Al-Allaf, Emad Hani, Representation Technologies of the Built Heritage, 2018.
العلاف، عماد هاني، تكنولوجيا إعادة تمثيل التراث العمراني، 2018
- Al-Allaf, Emad Hani, Information modeling and management technology for historical sites and urban heritage buildings, 2018.
العلاف، عماد هاني، تكنولوجيا نمذجة وإدارة المعلومات للمواقع التاريخية ومباني التراث العمراني، 2018

Course Details:

Subject	Week
Conservation history, process and objectives. International charters and organizations. The Heritage of Iraq and its old cities. Iraqi experiments in conservation and documentation.	1
Modern technologies and activities of documentation and urban conservation Urban preservation and the problem of multiplicity of modern technologies for documentation and information management Representation and three-dimensional models in documenting urban heritage Digital engineering models, their types and advantages in documentation and urban conservation activities	2
Contact Techniques for 3D Information Acquisition	3
Photogrammetry	4
Laser Scanning	5

Non-Destructive Techniques Infrared Thermography-IR	6
Global Positioning System – GPS	7
1 st term Exam	8
360 degrees’ panorama software, benefits, how to create, case study .	9
Virtual reality- aims, requirements, interaction types .	10
VR benefits and limitation, VR systems. 3D virtual city, Virtual Museums	11
Geographic information system (GIS)	12
Unmanned Aerial Vehicles Robots Documentation of Underwater Heritage	13
3D Printers	14
2nd term Exam	15

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Course Title: Computer Aided

Architectural Drawing

Course Number/Type: ARC 250- Core

Credit Hours: 2

(1 Theoretical and 2 Practical h/week)

Level/Term: 2nd level / Spring

Prerequisites: None

Course Description:

Computer Aided Drawing is a scientific course with theoretical and practical parts, concerned with providing specialized information in the field of graphic computer software related to engineering and architectural drawings, especially the AutoCAD software.

The approach of the course is based on explaining the details of the drawing process and the use of the program in sequential and interrelated stages, enabling the user to use the commands gradually, according to the degree of importance of the order, its level of complexity, and the user's need for it according to the level of his capabilities and his ability of dealing with the details, orders and elements of the software

Refernces:

Al-Allaf, Emad Hani, 3D models in computer aided drawing software- AutoCAD software, 2018.

Al-Allaf, Emad Hani, Rendering in AutoCAD software, 2018.

العلاف، عماد هاني، النماذج ثلاثية الأبعاد في برمجيات الرسم بمساعدة الحاسوب - برنامج AutoCAD، 2018

العلاف، عماد هاني، الإظهار المعماري في برنامج الأوتوكاد في برنامج AutoCAD، 2018

Course Details:

Subject	Week
Thickness, Elevation, Orbit, 3D views, UCS	1
Modeling 1 Poly Solid, Trace, Box, Wedge, Cone, Sphere, Cylinder, Torus, Pyramid	2
Modeling 2 Extrude, Press Pull, Revolve, Sweep, Loft, 3D Polyline, Helix, Planer, Solid, 3D Face	3
Modeling 3 Meshes, Revolved mesh, Tabulated mesh, Ruled mesh, Edge mesh, Network, surface	4
3D Operations Gizmo, 3D Move, 3D Rotate, 3D Scale, 3D Align, 3D Mirror, 3D Array , Interfere, Slice, Thicken, Convert to Solid, Convert to Surface	5
Solid Editing Union, Subtract, Intersect, Solid Edit, Extrude Face, Move Face, Rotate	6

Face,Offset Face,Taper Face>Delete Face,Copy Face,Color Face,Copy Edge,Color Edge Chamfer Edge,Fillet Edge,Imprint Edges,Separate,Shell ,Clean,Check	
Application	7
1st term Exam	8
Render Render Settings rendering process, Rendering Procedure, The final destination for the scene processing process, Image saving settings - Output File Name, Image resolution settings and characteristics, Managing preset display process methods, Improve processing and visibility	9
Render Material Material Browser, Inclusion of cladding and finishing materials in the AutoCAD program, Library of materials for cladding and finishing in AutoCAD, Texture Materials window, Designation and inclusion of cladding materials on the surfaces of the figures, Control libraries of cladding materials , Mapping	10
Modifying materials Create the texture material, Characteristics of cladding materials, General characteristics, Glossiness level refinement, Highlights, Reflectivity, Transparency, Translucency, Refraction, Cutout, Self Illumination, Bump Map - The roughness of the material	11
Lights Point Light, Spot Light , Distant Light, Web Light, Natural Light, Render Environment, Sun & Sky, Sky Background, Sun Properties, Geographic Location	12
Views and Interaction Camera, Walk & Fly , Motion Path Animation, Background, Fog and Depth Cueing, Work Spaces, Palettes and 3D Blocks	13
Application	14
2 nd term Exam	15

University of Mosul
College of Engineering
Department of Architecture



Course Title: Architecture and Human Science
Course Number/Type: ARC 263 -Elective
Credit Hours: 2 (2 Theoretical h/week)
Level/Term: 2nd level / Spring
Prerequisites: None

Course Description:

-The course introduces students to the fundamental principles of architecture and human sciences.
 -The subject aims is defined theoretical links to architecture and the humanities, human values and the specificity of the architectural product, the nature of the interaction between humans and the place, philosophy of beauty and its relationship to human emotion in architecture.

References:

١-الاعتبارات الانسانية في التصميم المعماري، دار جامعة الملك سعود للنشر، المؤلف ك.م. ديسي ، ثوماس لاسويل، ترجمة : عبد العزيز بن سعد المقرن ، السنة ١٤٣٧ .
 ٢-اللغة السيكلوجية في العمارة (المدخل في علم النفس المعماري) ، المؤلف : د. الحارث عبدالحميد حسنيك.

Course Details:

Subject	Week
Introduction and theoretical links to architecture and the humanities.	1
Human values and the specificity of the architectural product.	2
The nature of the interaction between humans and the place.	3
The philosophy of beauty and its relationship to human emotion in architecture.	4
The effect of the architectural form on achieving visual excitement.	5
The role of building material, in terms of its texture and luster, to achieve visual tension.	6
The effect of colors on changing the psychological character of the user.	7
Architecture between the requirements of need and idealism of theorizing.	8
The type of buildings and its effect on human behavior.	9
The human space and its types.	10
Monthly exam + initial discussion of reports.	11
Expulsive and attractive spaces.	12
Static and variable spaces.	13
Discuss reports.	14
The final exam.	15



جامعة الموصل
كلية الهندسة
قسم هندسة العمارة

مفردات المناهج للدراسة الأولية
للمراحل الثالث والرابع والخامس

العام الدراسي 2020-2021



مفردات المنهج – المرحلة الثالثة
الفصل الاول و الفصل الثاني

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Code No.	Title of Subject	Credits	First semester		Second semester	
			Theoretic H/W	Practical H/W	Theoretic H/W	Practical H/W
ENAR-301	Architectural design	12	2	8	2	8
ENAR-302	Principles of planning	2	2	-	-	-
ENAR-303	The logic & Design methodology	2	2	-	-	-
ENAR-304	History of Architecture	4	2	-	2	-
ENAR-305	Building construction-3	6	1	4	1	4
ENAR-306	Building Services /Electrical	2	-	-	2	-
ENAR-307	Design of Reinforced concrete structures	4	1	2	1	2
ENAR-308	Computer-3	4	1	2	1	2
ENAR-309	Building services / Plumbing	2	2	-	-	-
ENAR-310	Building service/ Air-conditioning	2	-	-	2	-
Total		40	13	16	11	16
			29 H/W		27 H/W	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Title of Subject	Architectural design		Theoretic Hour/week	Practical Hour/week
			2	8
			Credits:	12
Code No.	ENAR-301			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>	
Course Objective	Introducing projects with complicated functional nature which contain multi-functional systems and realizing the role of structural systems and new constructional technologies as a creative tool in the process of architectural design .There is an emphasize on the issue of local architectural identity.			
Course Description	The course is basically practical with some hours for theoretical and discussion issues .The stage of data collection represents the first step concerning both site analysis and existing examples. Design work in the design studio occupies the main part in the course with a significant role of high-quality architectural rendering in presenting results .			
Textbook				
References	1-Time –Saver Standards for Architectural design data 2- Architect's Design data 3 – Time- Saver Standards for Building Types			
Course Assessments	Yearly work		Final Exam	
	%100		0%	

Course Weekly Outline

Week	Topics Covered	Notes
1	Introduction	
2	Data collection	
3	Site Analysis	
4	First design proposal	
5	Discussion	
6	Discussion	
7	First submission	
8	Discussion	
9	Discussion	
10	Discussion	
11	Second submission	
12	Discussion	
13	Discussion	
14	Pre-final submission	
15	Discussion	
16	Final submission	
Half-Year Break		
17	Introduction	
18	Data collection	
19	Site Analysis	
20	First design proposal	
21	Discussion	
22	Discussion	
23	First submission	
24	Discussion	
25	Discussion	
26	Discussion	
27	Second submission	
28	Discussion	
29	Discussion	
30	Pre-final submission	
31	Discussion	
32	Final submission	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Principles of planning

Title of Subject	Principles of planning			Theoretic Hour/week	Practical Hour/week
				2	
	Credits:		2		
Code No.	ENAR-302				
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	This course is an introduction to the history and theories of urban spatial design. Approaches to the development of urban spaces throughout history are discussed, including Greek, Roman, Renaissance, Islamic, Baroque, Utopian, and Modern post-industrial concepts. Influential urban design theories and trends in modern times, their implications and feasibility, are studied. Urban social behavior and the psychological effects of urban space on its users are also studied.				
Course Description	Basic concept ;planning studies, emerge of Human Settlements				
Textbook	Urban planning				
References	Selah Aljanabe ,Alafeffe ,Alashab.....				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	Introduction	
2	Basic definitions, relation between architecture and planning work	
3	The emergence of human settlement in ancient civilizations	
4	Medieval town , the Islamic city	
5	Modern theories and ideas of urban planning	
6	element of urban areas/ Streets	
7	Technical aspects of streets planning	
8	Walk ways	
9	Car parking	
10	Squares and circuses	
11	Residence in city	
12	Town Greenery	
13	the Master Plan	
14	the Master Plan	
15	Introduction to Urban Renewal	
16		
Half-Year Break		
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Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of The logic & design methodology

Title of Subject	The logic &Design methodology		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-303			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	It aims to develop student's ability to raise intellectual & systematic thinking used in solving design problems			
Course Description	It's a theoretical course for a single semester, 2 hours weekly concentrate on the theoretical & formal logic and science methodology with their applications to the scope of architecture and design			
Textbook				
References	Baker, G. H. DESIGN STRATIGIES IN ARCHITECTURE, An Approach to Analysis Form ,(2nd Ed.)Van Nostrand Reinhold Co. New York, 1996. Coyne, R., D., LOGIC MODELS OF DESIGN, Pitman Press, London, 1988. Gero, J., S. & B., Tversky, (Eds.), VISUAL AND SPATIAL REASONING IN DESIGN , Key Centre of Design computation and cognition ,			
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Thinking , Patten of Thinking& perception schemes	
2	Physiological definitions of thinking and productive thinking	
3	Formal logic	
4	Logical terms	
5	Logical inference	
6	Deduction, induction, abduction in logic	
7	Analogy and its application	
8	Exame	
9	Methodology and Epistemology	
10	Design Methodology	
11	Black box methodology in architectural design	
12	Glass box methodology in architectural design	
13	Projects Site & function analysis	
14	Projects synthesis	
15	Projects alternative evaluation	
16		
Half-Year Break		
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College of Engineering

Architectural Engineering Dept.

Detailed Description of History of Architecture

Title of Subject	History of Architecture		Theoretic Hour/week	Practical Hour/week
			4	
			Credits:	4
Code No.	ENAR-304			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>	
Course Objective	-Inform students about the development of European Architecture from pre-Roman age until Renaissance and Baroque. -Enhance the concept of architectural interactions between European civilizations and others, specially with Arabic-Islamic civilizations. -Analysing historical examples according to architectural theories			
Course Description	Theoretical lectures how designing the plumbing systems			
Textbook	<i>A History of Architecture</i> , edited by: Dan Cruickshank, Architectural Press, London			
References	<i>Graphic History of Architecture</i> , B.T. Bastsofrd Ltd., London, 1967.			
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Introduction to the history of European Architecture	
2	Etruscan Architecture	
3	Roman Architecture: Influences	
4	Roman Architecture: Architectural characters	
5	Roman Architecture: Rectangular Temples	
6	Roman Architecture: circular Temples	
7	Roman Architecture: Basilicas & Thermals	
8	Roman Architecture: Theatres ,Amphi-theatres & Circuses	
9	Roman Architecture: Palaces, Tombs & Triumphal Arch's	
10	Interaction between Roman and Eastern Architecture	
11	Architecture of Petra	
12	Architecture of Hatra	
13	Architecture of Palmyra	
14	Early Christian Architecture: Influences	
15	Early Christian Architecture: Churches	
16	Discussion	
Half-Year Break		
17	Byzantine Architecture: Architectural characters	
18	Byzantine Architecture: Examples	
19	Byzantine Architecture in the East	
20	Romanesque Architecture: Architectural characters	
21	Romanesque Architecture: Examples	
22	Interactions between Romanesque & Islamic Architecture	
23	Gothic Architecture: Architectural characters	
24	Gothic Architecture: Examples	
25	Introduction to Renaissance Architecture	
26	Early Renaissance Architecture	
27	Architects of Early Renaissance	
28	High Renaissance Architecture	
29	Architects of High Renaissance	
30	Baroque Architecture	
31	Architects of Baroque	
32	Discussion	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Building construction-3

Title of Subject	<u>Building construction-3</u>		Theoretic Hour/week	Practical Hour/week
			1	4
			Credits:	6
Code No.	ENAR-305			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>	
Course Objective	Educate the student how design the working drawing sheet , Educate other related construction systems by theoretical and practical studying (exercises and field visits) , so the student should be able to work , read the working and architectural drawings and learn the technical details of their own .			
Course Description	the topic of building construction deals with execute methods of building construction from architectural view,(first semester,skeleton system) modern methods in building construction new technology in building construction (Precast roofs , floors concrete & metal skin in envelop of building) (second semester , steel structure). new technology and mechanism uses in building construction			
Textbook				
References	1 . building construction vol. 3 2 . building construction vol. 5 3 . working drawing handbook 4 . structure and fabric 5 . تركيب المباني الأبنية الهيكلية أنيس جواد 1987 الجامعة التكنولوجية			
Course Assessments	Yearly work		Final Exam	
	%80		%20	

Course Weekly Outline

Week	Topics Covered
1	Definition of building construction material and the relationship between initial ideas and planned Executive and to all the terms of reference
2	How to set up the chart of the Executive and the standards of the scheme, as well as special symbols chart Executive
3-4-5-6	First submission: A detailed explanation of the physical layout of the level of sections and plans and interfaces, as architectural details
7-8	Detailed explanation of the planned construction and structural details
9-10	Detailed explanation of the health plan and health details
11-12	Second t submission: Detailed explanation of the method of construction-ready systems and various Construction
-13-14-15	Architectural details and construction of the building ready at the level of ceilings and walls, the work of the link between the prefabricated pieces (ready),
16	Final submission
Half-Year Break	
17	. Structural comparison between the traditional and structural with the structural system of metal structures
18	Structural types of systems for metal structures
19-20-21	System of structural steel (type of steel trusses) with the structural details
22-23	First submission: Metal structural system (steel structure type space frame) with the structural details of this particular
24-25	System of structural steel (type of cable drag) with the structural details
26	Structural systems for metal
27	Explanation of the electrical plans with details
28-29	Second t submission: Mechanical explanation of the plans with details
30-31	Modern methods of construction (Construction cortical systems and the structural system hung and blown the stru system)
32	Final submission

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Building Services/Electrical

Title of Subject	Building Services/Electrical		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-306			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	Electricity Services design for buildings			
Course Description	Introduction to different lighting systems. Lighting requirements under different working conditions. Detailed understanding of artificial lighting sources. Quantity and quality of light for various architectural spaces. Polar curves for various artificial lighting sources. Design of artificial lighting systems for avoiding glare. Artificial lighting design of outdoor spaces. Theoretical Lectures which Learn Students Design of the Electricity Services Systems & how to design it in different buildings.			
Textbook				
References	Environment and Services By Peter Burberry Dip Arch, Msc, RIBA, FCIQB, London, Basford Limited, 1986. التأسيسات الكهربائية- د. مظفر النعمة ود. سنان عطار باشي- 1982			
Course Assessments	Yearly work	Final Exam		
	%40	%60		

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	General definitions	
18	The Electricity Services Basis	
19	Types of Electricity Services	
20	Calculation the Power Factor	
21	Grounding (General definitions)	
22	Types of Electricity Generation and Solar Energy	
23		
24	Determine Electricity Services Positions	
25	Lighting Design Conditions	
26	Types of Electricity Services Utilities	
27		
28	Utilization of New Technology and Computers to Assume Electricity & Lighting Distributions	
29	Engineering Project	
30	Design of the Electricity Services Systems Methods in Building(Residential, Industrial, Commercial,...)	
31	General Preview	
32	General Discussion	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Reinforced Concrete Design Courses

Title of Subject	Design of Reinforced concrete structures			Theoretic Hour/week	Practical Hour/week
				2	1
				Credits: 4	
Code No.	ENAR-307				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>		
Course Objective	These courses aim at studying mechanical properties and fundamentals of reinforced concrete according to the ACI-code, and also aim at providing the students with the skills and techniques required for design the sections and reinforcement for the structure elements such as footings, columns, beams and slabs with details working drawings.				
Course Description	These courses cover the properties of fresh and hard concrete and reinforcing steel, design the elements of the reinforced concrete structural frames by using the Ultimate Strength Theory, design the singly and doubly reinforced beams, one way and two way slabs, concentrically and eccentrically loaded columns and wall and spread footings.				
Textbook	"Reinforced Concrete Fundamentals" by P.M. Ferguson. " ACI-Standard 318 "				
References	" Design of Concrete Structures " by G. Winter and A.H. Nilson				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	Properties of concrete , cement , aggregates	
2	Properties and test of fresh concrete .	
3	Properties and tests of hard concrete.	
4	Properties of reinforcing steel.	
5	Ultimate strength theory ,design of beam for flexure .	
6	Design of beam in balance condition .	
7	Design of beam in maximum condition .	
8	Design of singly reinforced beam .	
9	Design of doubly reinforced beam.	
10	Types and used of slabs.	
11	Design of one way slab .	
12	Design of main and secondary reinforcement .	
13	Design of shear reinforcement in beams .	
14	Minimum shear reinforcement .	
15	Design of vertical U-stirrups	
16	Design problems .	
Half-Year Break		
17	Design of continuous beam and continuous slab .	
18	ACI-code coefficients for moment .	
19	ACI-code coefficients for shear .	
20	Design problems .	
21	Design of short tied column .	
22	Design of axially loaded short tied column.	
23	Design of longitudinal reinforcement .	
24	Design of ties .	
25	Design of eccentric loaded column .	
26	Design of footings .	
27	Types and used of footings .	
28	Design of wall footing .	
29	Design of axially loaded spread footing .	
30	Design of two way slab	
31	ACI-code coefficients for moment .	
32	Design problems .	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Computer-3

Title of Subject	Computer-3			Theoretic Hour/week	Practical Hour/week
				1	2
				Credits:	4
Code No.	ENAR-308				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>		
Course Objective	The purpose is to qualify students to handle, solve and manipulate Architectural, Urban design problems using relevant computer soft wares.				
Course Description	The study encompasses theoretical, practical parts, and project work, aiming to make students Obtaining skills of Modeling, Animation, Materials editing, Lighting manipulation, using 3dsmax package				
Textbook					
References	Help of 3dsmax7, 3dsmax bible by Kelly Murdock, 3ds Max 8 Fundamentals by Ted Boardman.				
Course Assessments	Yearly work		Final Exam		
	%60		%40		

Course Weekly Outline

Week	Topics Covered	Notes
1	Effects of digital revolution upon Architecture.	
2	About 3dsmax- Curriculum description	
3	Object properties, pivot, sub-object	
4	Transforms, Low polygon modeling, Clone types	
5	Low polygon modeling-cont. starting Animation	
6	A Brief illustration of Modeling types, modify commands	
7	Modify commands cont., pivot manipulation.	
8	Modify commands cont., Special clone activities	
9	Preferences, Helpers, Measure tools	
10	Motion constraints, Display Hide& Freeze	
11	Compound Objects Modeling: Loft	
12	Compound Objects2: Terrain, Shape merge, Boolean, Scatter	
13	Track View: Dope, Curve	
14	Space Warps	
15		
16		
Half-Year Break		
17	Materials 1:prime, shade's, maps, modify	
18	Materials 2: materials libraries, Backgrounds.	
19	Materials3:reflection maps, mix maps, Alpha channel.	
20	CURFEU FOR ELECTIONS	
21	Materials4: Displacement, rest of maps	
22	Materials5: Multi-Layered Materials	
23	Rendering, Types of rendering	
24	EXAM.	
25	Cameras	
26	Procedures for transmitting AutoCAD file to 3dsmax. Enhancing AutoCAD model by 3dsmax.	
27	Semester Exams. EXAM2	
28	Lights: standard	
29	Project works	
30	Project works	
31	Lights: Advances(Photometric, Radiosity &Light tracer, Exposure).	
32	NURBS Modeling.	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Building services / Plumbing

Title of Subject	Building services / Plumbing		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-309			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	Plumbing design for building			
Course Description	Theoretical lectures how designing the plumbing systems			
Textbook	Mathematical and electrical systems in building, William K. Y. Tao & Janis, practice hall NJ.1997			
References				
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	The scope of plumbing	
2	Water supply to the buildings	
3	Water tanks (roof & underground)	
4	Tank capacity standards	
5	Water Treatments	
6	Plumping fixtures & standards	
7	Plumping components	
8	Sanitary drainage systems	
9	Water distribution system	
10	Water pipe sizing	
11	Solved problems & design	
12	Septic tanks	
13	Rain water drain in buildings	
14	Standards	
15	Solved problems & design	
16	Review	
Half-Year Break		
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Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:3rd.

Detailed Description of Building service/ Air-conditioning

Title of Subject	Building service/ Air-conditioning		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-310			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	Air-conditioning design for building Air			
Course Description	Theoretical lectures how designing the Air-conditioning Systems			
Textbook	Mathematical and electrical systems in building, William K. Y. Tao & Janis, practice hall NJ.1997			
References				
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Definition & introduction	
18	Ton of refrigeration	
19	A\C process	
20	Design parameters of thermal comfort	
21	Standards of thermal comfort	
22	Diameters of main ducts	
23	Examples for supply & exhaust	
24	Cooling load calculation	
25	Heating load calculation	
26	Heat gain & loss through materials	
27	Heat gains through windows	
28	A\C ventilation & ducts	
29	Sizing & distribution	
30	Psychometric charts	
31	Examples	
32	Efficiency	

مفردات المنهج – المرحلة الرابعة

الفصل الاول و الفصل الثاني



Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:4th.

Code No.	Title of Subject	Credits	First semester		Second semester	
			Theoretic H/W	Practical H/W	Theoretic H/W	Practical H/W
ENAR-401	Architectural Design	14	2	10	2	10
ENAR-402	Interior Design	2	1	3	-	-
ENAR-403	Landscape Design	2	-	-	1	3
ENAR-404	Islamic Architecture	4	2	-	2	-
ENAR-405	Advanced Building Techniques	2	2	-	-	-
ENAR-406	Theories of Architecture	4	2	-	2	-
ENAR-407	Housing	4	2	-	2	-
ENAR-408	Theories of Urban design	4	2	-	2	-
ENAR-409	Architecture & climate	2	2	-	-	-
ENAR-410	Architecture Acoustic	2	-	-	2	-
ENAR-411	Programming Architectural Spaces	2	-	-	2	-
ENAR-412	Design of Steel structures	2	-	-	2	-
Total		44	15	13	17	13
			28H/W		30H/W	

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:4th.

Detailed Description of Architectural Design

Title of Subject	Architectural Design			Theoretic Hour/week	Practical Hour/week
				2	10
				Credits:	14
Code No.	ENAR-401				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>		
Course Objective	At the end of the year, the student has to know how to design complex buildings with complex systems regarding function, services, occupants and users, and how to relate the system's buildings to their direct and indirect urban context.				
Course Description					
Textbook					
References	References with the subjects of certain selected building types such as Hospitals, Court Houses, Libraries, and mixed use mega- structures complexes.				
Course Assessments	Yearly work		Final Exam		
	%100		%0		

Course Weekly Outline

Week	Topics Covered	Notes
1	Project Assignments/ Introduction	
2	Functional Programs & Site Selection Groups	
3	Analysis of Functional Programs Groups	
4	Analysis of Precedents and similar examples Individual	
5	Initial Ideas & Concepts/ Discussions Individual	
6	Development of Concept	
7	Initial Presentation+ Ground Floors	
8	Criticism & Development	
9	Criticism & Development	
10	Initial Presentation+ Elevations	
11	Criticism & Development	
12	Criticism & Development	
13	Pre- final Presentation	
14	Development	
15	Final Submission	
16		
Half-Year Break		
17	. Project Assignments/ Introduction	
18	18 Functional Programs & Site Selection Groups	
19	Analysis of Functional Programs Groups	
20	Analysis of Precedents and similar examples Individual	
21	Initial Ideas & Concepts/ Discussions Individual	
22	Development of Concepts	
23	Initial Presentation+ Ground Floors	
24	Criticism & Development	
25	Criticism & Development	
26	Initial Presentation+ Elevations	
27	Criticism & Development	
28	Criticism & Development	
29	Pre- final Presentation	
30	Development	
31	Final Submission	
32		

Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:4th.

Detailed Description of Interior Design

Title of Subject	Interior Design		Theoretic Hour/week	Practical Hour/week
			1	3
			Credits:	2
Code No.	ENAR-402			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	To provide a comprehensive understanding of the major aspects of Interior Architecture, And encourage student to use creative methods to solve Interior design challenge			
Course Description	Design studio allows students to create creative interiors with spatial qualities that are habitable for people on all levels of experience: aesthetically, functionally, and psychologically. With comfort and efficiencyInterior , architecture study of the relationships within the building enclosures; architectural planes, aspects of layout, furnishing, vertical and horizontal circulation among interior spaces, properties of interior materials, space lighting and acoustics.			
Textbook				
References	Interior Design Illustration ,Van Nostrand Reinhold Co.,1987. Francis D.K. Ching, - -Joseph DeChiara, Time-Saver Standards for Interior Design and Space Planning, 2nd Edition ,McGraw Hill, 2001			
Course Assessments	Course work		Final Exam	
	80 %		20 %	

Course Weekly Outline

Week	Topics Covered	Notes
1	Introduction ,definitions , references	Start 1 st project.
2	Review of previous years students projects	
3	Review of international interior design projects	
4	How to start interior Design	
5	Interior Space Analysis & Requirement	Start 2 nd project
6	A Design Vocabulary ,Form ,Shape	
7	Texture ,Light, ,Color	
8	Interior Design Principles,	
9	Interior Design Elements, ceilings ,walls	
10	,floors, Doors, Windows ,Staircases	
11	Furniture ,Accessories	
12	Integration of HVAC . Systems with interior Design	
13	Interior Design Materials	
14	Visual Design, Attentions ,Illusions	
15	Students reports discussion	
16	Interior Design Project final discussion	
Half-Year Break		
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Mosul University

College of Engineering

Architectural Engineering Dept.

Stage:4th.

Detailed Description of Landscape Design

Title of Subject	Landscape Design		Theoretic Hour/week	Practical Hour/week
			1	3
			Credits:	2
Code No.	ENAR-403			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	To provide a comprehensive understanding of the major aspects of Landscape Architecture, And encourage student to use creative methods to solve landscape design challenges.			
Course Description	Comprehensive application of landscape design skills. Design studio allow students to apply theories and principles of landscape architecture to their own projects. These projects are developed according to certain scale requirements cover areas such as urban open spaces,.introducing theories, principles and examples of contemporary landscape architecture with emphasis on landscapes for hot arid environments; site analysis and landscape evaluation; , site design; ; theory, process, materials, features and design elements; appropriate plant materials, structures, pavements and street furniture, grading, drainage and irrigation.			
Textbook				
References	1-MUTLOCH, J.L., Introduction to Landscape Design, John Wiley & Sons, 2001 2-Theodore D., Site Design and Construction Detailing, John Wiley & Sons, 1991			
Course Assessments	Course work		Final Exam	
	80 %		20 %	

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Introduction ,definitions , references	Start 1 st project.
18	Review of pervious years students projects	
19	Review of international landscape design projects	
20	How to start landscape Design	
21	History of garden design,	Start 2 nd project
22	Site analysis	
23	Site furniture and fixture	
24	Plant material	
25	Planting design	
26	Water in Landscape design	
27	Gardens types	
28	Energy conservation through landscape design	
29	Information technology in landscape architecture	
30	Landscape detailing	
31	Students reports discussion	
32	Landscape Design Project final discussion	

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Architectural Engineering Dept.

Stage:4th.

Detailed Description of Islamic Architecture

Title of Subject	Islamic Architecture			Theoretic Hour/week	Practical Hour/week
				2	
				Credits:	4
Code No.	ENAR-404				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>		
Course Objective	to build a wide information and a database about historical Islamic Architecture, its theory and applications, Islamic cities , building types, features, elements and arts., which is a source of inspiration for new architecture and simulation to the present time with an identity				
Course Description	Studying Islamic Architectural in tow aspects, first the theory of Islamic Architectural and its reference Islamic religion (principles and rules of architecture) and the second focal point on the theory application in Islamic cities, building types, features, elements, arts, examples				
Textbook					
References					
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	Definition of the topic. And requirements, the report.	
2	Theory of Islamic Architecture ,Structure basis of the theory of Islamic architecture, the principles of belief.	
3	Cosmic link(community spirit), Unity, Science and innovation.	
4	Worship and its impact on architecture	
5	The principles and purposes of AlShariah (Islamic jurisprudence)	
6	System of ethics and Beauty - Islamic Ethics	
7	the rules of the formation of physical infrastructure, Quran and Sunnah	
8	Rights and Provisions of the construction law and jurisprudence	
9	Physical models of civilization, Mecca, the Grand Mosque Kaaba of Mecca -	
10	Prophet's Mosque in Medina	
11	Al-Aqsa Mosque, Dome of the Rock mosque	
12	Examination and identification of reporting	
13	Impact of the environment (place and time)Style in Islamic architecture	
14	Impact of the environment (place and time) Style in Islamic architecture Impact of the environment (place and time) Style in Islamic architecture	
15	The first type - the ancient cities of developed - Medina - City of Damascus The second type - the regions - Basra - Kufa	
16	The third type - cities designed - Baghdad - Samarra Fundamental rights that have affected the social behavior of the built environment	
Half-Year Break		
17	Types of buildings in Islamic architecture, The mosque and the urban fabric of the city, mass, shape and Planning, Types of mosques in the city planning	
18	Types of planning (design) historic mosques, Arabic type	
19	Seljuk type, Ottoman type,Ewan type.	
20	Components of the mosque,	
21	Mosque form	
22	Models of mosques ,Examples	
23	Schools	
24	Residential buildings, housing the Islamic	
25	Bathroom ,Public building	
26	Discussion of the types of buildings in medieval Islamic architecture	
27	Elements ,Almihrab	
28	Examination	
29	Almanara	
30	Domes, vaults and vaults, columns	
31	Surface Treatment ,Aesthetic elementsEnvironmental elements	
32	Reports Discussion	

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Stage:4th.

Detailed Description of Advanced Building Techniques

Title of Subject	Advanced Building Techniques		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR- 405			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	Discuss and provides the basic concepts of: building construction, building structures, building materials, new technologies in Architectural design.			
Course Description	This course aims at understanding advanced building Techniques; prefabrication and modular structures. Advanced building construction systems, new materials and responsive technologies ,sky scrapers (structural & climatically) analysis.			
Textbook				
References	- The Sky Scrapers, by/ Ken Yeang – 1996/1999 Understanding Structures, by Fuller Moore – 1999- Structural Design In Architecture, by James Waly - 1996 -			
Course Assessments	Yearly work		Final Exam	
	% 40		% 60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Technology concept & Technology in Architecture	
2	Building Techniques	
3	Building structures	
4	Tectonic & Atectonic in Architecture	
5	The sky scrapers (history & environment)	
6	The sky scrapers (structure& construction)	
7	Pre-cast & pre-stress beams	
8	Shell structure	
9	Space frame structure	
10	Tent & Cable structure	
11	Folding Architecture	
12	Sustainable Architecture	
13	Intelligent Architecture	
14	Engineering services technology	
15	Fire safety in buildings	
16	Green Architecture	
Half-Year Break		
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College of Engineering

Architectural Engineering Dept.

Stage:4th.

Detailed Description of Theories of Architecture

Title of Subject	Theories of Architecture			Theoretic Hour/week	Practical Hour/week
				2	
	Credits:	4			
Code No.	ENAR-406				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>		
Course Objective	On successful completion of this module, students should be able to: 1. Demonstrate familiarity with the basic geographical and chronological framework of the architectural trends of Modern, Late-Modern, Post-Modern and Deconstructive Architecture. 2. Demonstrate familiarity with the major monuments of these trends and some knowledge of the relationships between buildings and the societies that produced them. 3. Think clearly and critically about architecture and express ideas in a structured and coherent way, with reference to contemporary and historical examples. 4. Demonstrate skill and confidence in ordered and coherent expression, both written and spoken.				
Course Description					
Textbook					
References	Changing Ideals in Modern Architecture/ Peter Collins Modern Architecture since 1900/ William Curtiz Architecture Today/ Charles Jencks • شیرزاد إحسان شیرین / العمارة في العالمي الاسلوب				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	Backgrounds of Modern Architecture	
2	The Beginning Strands of Modern Architecture	
3	Revivalism	
4	The Chicago School of Architecture	
5	The Architecture of the Art Nouvea	
6	The Architecture of Expressionism	
7	Organic Architecture/ Frank Lloyd Wright	
8	De Stijl & Constructivism	
9	International Style & the Bauhaus School	
10	The Architecture of Le- Corbusier	
11	The Architecture of Functionalism	
12	Examination	
13	The Architecture of Brutalism	
14	Archigram & Metabolism	
15	Presentation and Discussion of Reports	
16		
Half-Year Break		
17	Crises of Modern Architecture.	
18	The Issue of Communication in Modern Arch	
19	Backgrounds of Late-Modern & Post-Modern Arch.	
20	Late-Modern Architecture/ Theories & Practices	
21	Late-Modern Architecture/ Theories & Practices	
22	Late-Modern Architecture/ Theories & Practices	
23	Late-Modern Architecture/ Theories & Practices	
24	Post-Modern Architecture/ Theories & Practices	
25	Post-Modern Architecture/ Theories & Practices	
26	Post-Modern Architecture/ Theories & Practices	
27	Post-Modern Architecture/ Theories & Practices	
28	The architecture of Deconstruction/ Theory & Practices	
29		
30		
31	Presentation and Discussion of Reports	
32		

Detailed Description of Housing

Title of Subject	Housing		Theoretic Hour/week	Practical Hour/week
			2	2
			Credits:	4
Code No.	ENAR-407			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>	
Course Objective	Making behavioral changes for students after they had understood Basics of Housing, main topics like: Housing as an Economic sector, Planning Indicators :(FAR) , (PC),(O.R.)in H.Planning.Practical planning of Residential urban fabric			
Course Description	Definitions & Discussion of Housing Need, H.Demand, H.Densities, H.Standards & types. Definitions & Discussion of Components of Residential urban fabric With their Comprehensive View & philosophy. As a requirement, student should present a report about one of main housing topics during the course			
Textbook	<ul style="list-style-type: none"> "Housing in Iraq - Problems - Policies - Programs", 1958 – Doxiadis Associates - Consulting Engineers - Republic of Iraq. <p>مدينة التراث الجديدة، 1987، تقرير المخطط الأساس النهائي"، حزيان، مجموعة اتحاد دو كسيادس. الهيئة النعمة، مازن جابر: "دراسة تخطيطية عمرانية لحي السكن العربي الجمهورية العراقية – المركزية للمدن الجديدة المعاصر مع مقترح تصميمي لمحلة سكنية نموذجية" رسالة مقدمة الى مركز التخطيط الحضري والاقليمي / جامعة بغداد لنيل درجة الماجستير سنة 1990- بغداد</p>			
References	<p>صالح، د. الهذلول، 1986، (نمو وتطور المحيط العمراني المعاصر في المملكة العربية السعودية) ، من بحوث الرياض – المؤتمر الثامن للمدن العربية طارق، والي، 1986، (القيم الإسلامية في بناء المجتمعات) من بحوث (الإسكان في المدينة الإسلامية)- القاهرة "مدينة البكر الصناعية – في خور الزبير – التصميم الأساسي" – 1975 – هيئة تخطيط المدينة الصناعية وزارة البلديات – مديرية التخطيط والهندسة العمدة – بغداد.</p> <p>حاتم، حازم الصوفي، 1988، (مفهوم الفضاء الحضري في المدينة العربية)، رسالة ماجستير مقدمة الى كلية الهندسة، جامعة بغداد.</p>			
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Housing and housing projects : historical view	
2	housing problem in Iraq	
3	housing strategies in Iraq	
4	main concepts in housing design	
5	Criteria's of urban housing design in Iraq	
6	classification of human needs in housing	
7	urban housing patterns in Iraq	
8	report discussion: stage 1	
9	façade of urban housing patterns in Iraq	
10	examination	
11	The development of Urban Housing pattern : environmental view	
12	report discussion: stage 2	
13	The development of Urban Housing pattern :social view	
14	The development of Urban Housing pattern : resident psychological view	
15	report discussion: stage 3	
16	report discussion: stage 3	
Half-Year Break		
17	Housing as an Economic sector, Dwelling Units as economic goods	
18	Housing Need - Definition & Discussion, How to estimate housing need	
19	Housing demand - Definition & Discussion, How to estimate housing demand	
20	& Housing Shortage - Definition & Discussion, Housing Stock - Definition	
21	Housing Standards - Definition & Discussion, Types of H. Standards, Norms of H. Standards in Iraq & other countries	
22	Housing Density – Definition, Types & Discussion,How to estimate net residential Density,How to estimate gross residential Density	
23	Control of Housing Densities	
24	Planning Indicators :(FAR) , (PC),(O.R.),Housing Policies - Definition & Discussion,Housing Programs - Definition & Discussion	
25	monthly exam	
26	Housing Market - Definition & Discussion,Market Factors that affect Housing Economy,Financial Policies for Housing Sector	
27	philosophy & Components of Residential urban fabric,Comprehensive View	
28	Dwelling Unit - Definition & Discussion,Factors that affect physical shape of Functions & D.U,Housing Street - Definition	
29	monthly exam	
30	Networks of movements,Vehicular Networks,Pedestrian Networks	
31	Open Spaces urban Networks	
32	Final Exam	

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Stage:4th.

Detailed Description of Theories of Urban Design

Title of Subject	Theories of Urban Design		Theoretic Hour/week	Practical Hour/week
			2	2
			Credits:	4
Code No.	ENAR-408			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input checked="" type="checkbox"/>	
Course Objective	It helps the students to understand the theories of the built environment& to conduct with the urban design problems			
Course Description				
Textbook				
References	Urban Space , Emerging Concepts Of Urban Design, Concepts Of Urban Design Theories			
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Sources of urban design theories	
2	Natural models	
3	Utopian-ideal models	
4	Models derived from the arts and sciences	
5	Planning theories	
6	Functional theories	
7	Normative theories	
8	Figure-ground theories	
9	Linkage theories	
10	Place theories	
11	Behavior trends	
12	Structuralism trends	
13	Spacesyntax trends	
14	Deconstructioalism trends	
15	Ratioalism trends	
16	Course Exam	
Half-Year Break		
17	Urban space concept	
18	Urban space concept	
19	Urban space design	
20	Urban space design	
21	Space Edges	
22	Space – Mass relation	
23	Space – Mass relation	
24	Functions of Urban Soace	
25	The Square	
26	The Formation of Square	
27	The Street	
28	The Formation of Street	
29	The size of Urban Space	
30	Report discussion	
31	Report discussion	
32	Course Exam	

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Stage:4th.

Detailed Description of Architecture & climate

Title of Subject	Architecture & climate			Theoretic Hour/week	Practical Hour/week
				2 hours	
				Credits:	2
Code No.	ENAR-409				
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	In general, the aim behind the course is to realize Mutually beneficial between buildings' design and its climate, to make indoor conditions comfortable and healthful with no or less climatic pollution.				
Course Description	The Definition of climate's elements and life buildings circle, climate zones, climatic pollution and Global warming. Environmental architectural theories, Sustainable theories, renewable energy, Integrated Design applied in principles and strategies of Sustainability. Autodesk Ecotect analysis 2011.				
Textbook					
References	<p>- الوكيل ، شفق العوضي؛ سراج، محمد عبدالله، (1985)، "المناخ وعمارة المناطق الحارة"، الطبعة الثانية، القاهرة.</p> <p>- Rovers, Ronald; Kimman, Jacques; Ravesloot, Christoph; (2010); "Towards 0-Impact Buildings and the Built Environments"; Techne Press, The Netherlands.</p> <p>- Kwok, Alison G.& Grondzik, Walter T., 2007,"The Green Studio Handbook-Environmental strategies for schematic design", First edition and. Published by Elsevier Inc.</p> <p>- Lechner, Norbert; (2001),"Heating, Cooling, Lighting- Design Method for Architects", John Wiley & Sons, New York.Inc.,Second Edition.</p> <p>- Binggeli, Corky,(2003),"Building systems for interior designers", John Wiley & Sons, Inc. New Jersey.</p>				
Course Assessments	Yearly work		Final Exam		
	40 %		60 %		

Course Weekly Outline

Week	Topics Covered	Notes
1	Introduction by Giving a glance on realize balance between two variable things which is climate and architecture and the importance of finding optimally relationship between them. Main Climatic types and its classifications Global warming and greenhouse gas emissions GHG.	
2	Giving a glance on the environmental architectural theories over the ages and focusing on sustainable environmental design.	
3	Climate's elements and explaining integrated design through Life cycle building.	
4	Planning and designing decisions for building according to conceptual, principles and strategies of sustainable design.	principles and strategies of the sustainable sites.
5		Principles and strategies of thermal comfort and Solved problems.
6		
7		Principles and strategies of Indoor Environment quality.
8		Ventilation, Daylight, Systems Lighting acoustical Performance and Visual Quality.
9		Principles and strategies of Energy Efficiency.
10		Building performance , on Site Renewable Energy and Low Levels of CO2 and Solved problems.
11		principles and strategies of Materials resources.
12	principles and strategies of Water Efficiency.	
13	Applying principles and strategies of sustainable design in AUTODESK ECOTECH ANALYSIS 2011 (measure and improve environmental design factors early on with our conceptual building performance analysis software)	
14		
15		
16	Applying a report (analysis for international buildings that achieved principles and strategies of sustainable design).	

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Stage:4th.

Detailed Description of Architectural acoustic

Title of Subject	Architectural acoustic			Theoretic Hour/week	Practical Hour/week
				2	0
	Credits:		2		
Code No.	ENAR-410				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	This course aims at understanding the physical properties of sound and light and their impact on the design of building systems; introduction to illumination, Day lighting, lighting fixtures and lighting systems in buildings; building's design requirements of illumination; and Lighting calculation methods and measurement techniques.				
Course Description	Acoustical design of building spaces and noise control; methods of treatment and selection of appropriate finishing materials to fulfill standard specifications of internal acoustical and lighting environments. Introduction of architectural acoustics calculations and measurement techniques.				
Textbook	Architectural acoustics “principles and design” madan mehia & others prentice hall NJ.1999				
References					
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Introduction to the wave phenomena	
18	Relationship (human – sound & space)	
19	Spl & IL with examples	
20	Sound ray diagram analysis & design	
21	Sound reflection – diffusion & diffraction	
22	Calculation the area of reflectors	
23	Reverberation times	
24	Solved problems	
25	Recommendation for acoustical design	
26	Resonance & sound insulation	
27	Sound absorption & air borne noise	
28	Sound absorption materials & properties	
29	Resilient materials	
30	Introduction to vibration Natural frequency – forced frequency driving	
31	Frequency, Solved problem	
32		

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Stage:4th.

Detailed Description of Programming Architectural Spaces

Title of Subject	Programming Architectural Spaces			Theoretic Hour/week	Practical Hour/week
				2	
				Credits:	2
Code No.	ENAR - 411				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	Increasing methodological knowledge for students to planning design process according to scientific and recent methods, with analytical application for real projects to discover its Goals and positions of application .				
Course Description	Theoretical course which include Previous Methods and Programming and The Process of Design Problem Solving, also the course related with aspects of design products (function; Performance Methods, Analysis, Goals Delineation, Performance Requirements, Programming Concepts, Synthesis Evaluation and Development), (form; Formal Methods, Berkal and Boss Strategy, and Greg Lynn Strategy), and (expression; Peter Eisenman Strategy, and Al-nijaidy Strategy)				
Textbook					
References	Architectural Programming) by Duerk((Structure of Design Process) by Al-Nijaidy (Animate Form) by Lynn (The Contrived Architectural Form in Design Methodology Framework) by Shubbar				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Introduction and Importance	
18	The Process of Design Problem Solving	
19	Previous Methods and Programming	
20	Performance Methods	
21	Analysis	
22	Analysis	
23	Goals Delineation	
24	Performance Requirements	
25	Programming Concepts	
26	Synthesis Evaluation and Development	
27	Formal Methods	
28	Formal Methods - Berkal and Boss Strategy	
29	Formal Methods – Greg Lynn Strategy	
30	Peter Eisenman Strategy	
31	Al-nijaidy Strategy	
32	Discussion	

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Architectural Engineering Dept.

Stage:4th.

Detailed Description of Design of Steel Structures Course

Title of Subject	Design of Steel Structures		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-412			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	This course aims at studying the properties of structural steel, steel sections and design concepts. In addition, the course discusses in details the design of main structural elements such as tension and compression members, beams and welded connection for tension members. These help to understand the behaviors of steel structures.			
Course Description	The course covers the design of axially loaded tension members, design of eccentrically and concentrically loaded compression members, design the beams and the welded connections, according to the B.S manual of steel construction.			
Textbook	"Design in Structural Steel" by John E. Loathers ' Manual of Steel Construction "			
References	"Applied Structural Steel Design" by Leonard Spiegel and George F. Limb runner			
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Design of axially loaded member.	
18	Calculation of reduced area ,holes on line .	
19	Calculation of reduced area with staggered holes .	
20	Problems and application .	
21	Design of axially loaded compression member .	
22	Effective length and slenderness ratio .	
23	Axial compression stress and problems .	
24	Design of eccentrically loaded compression member .	
25	Un-axial and biaxial moment compression member ,design formula	
26	Design of beam, bending and shear stresses .	
27	Buckling and crushing stresses .	
28	Combined stresses, deflection calculation .	
29	Problems and applications.	
30	Design of joints, welded joint.	
31	Axially loaded welded joint.	
32	Problems and applications.	

مفردات المنهج – المرحلة الخامسة

الفصل الاول و الفصل الثاني



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Stage:5th.

Code No.	Title of Subject	Credits	First semester		Second semester	
			Theoretic H/W	Practical H/W	Theoretic H/W	Practical H/W
ENAR-501	Thesis(2)	9	-	-	2	14
ENAR-502	Urban and Architectural Design	7	2	10	-	-
ENAR-503	Thesis(1)	5	2	6	-	-
ENAR-504	Architectural Criticism Theories	2	2	-	-	-
ENAR-505	Contemporary Iraqi Architecture	2	2	-	-	-
ENAR-506	Contemporary Arab Architecture	2	-	-	2	-
ENAR-507	Specifications & Estimation	2	2	-	-	-
ENAR-508	Professional Practice	2	-	-	2	-
Total		31	10	16	6	14
			26 H/W		20 H/W	

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Stage:5th.

Detailed Description of Thesis(2)

Title of Subject	Thesis(2)		Theoretic Hour/week	Practical Hour/week
			2	14
			Credits:	9
Code No.	ENAR-501			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	This studio begins with a presentation of the ARC-400 program document with clear indication of the intent and direction of emphasis. Having been reviewed and approved by a senior project committee, This project design is undertaken to its completion. The project must exhibit a comprehensive mastery of architectural design, reflecting the knowledge and skills acquired during four years of study in architecture. It aims to develop student's ability to conduct with the building and dealing with the design problems			
Course Description	It's a practical course for a single semester, 16 hours weekly depending on the first course and deals with the design problem as a whole from data collection up to final design			
Textbook				
References				
Course Assessments	Yearly work	Final Exam		
	%30	%70		

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
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18	Concept generation for design proposal	
19		
20		First presentation
21		
22	Functional modeling for design proposal	
23		
24	Elementary presentation	
25		
26	Elevations modeling for design proposal	
27	Sections modeling for design proposal	
28	Pre final presentation	
29		
30	Perspective modeling for design proposal	
31		
32	Final presentation	

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College of Engineering

Architectural Engineering Dept.

Stage:5th.

Detailed Description of Urban and Architectural Design

Title of Subject	Urban and Architectural Design		Theoretic Hour/week	Practical Hour/week
			2	10
			Credits:	7
Code No.	ENAR-502			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	It aims to develop student's ability to conduct with the urban design problems , Application of traditional and modern urban design theories and methods constitutes the backbone of the course. Focus is on the solution of urban spatial problems and urban rehabilitation. Examination of case studies is undertaken at the scale of a district within the city. Action area projects are chosen from adjacent urban areas to allow easy accessibility for data collection and actual site analysis.			
Course Description	It's a theoretical & practical course for a single semester , 12 hours weekly concentrate on the student's practice urban design problems			
Textbook				
References				
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
1	Data collection of project	
2	Data analysis of project	
3	Data assessment and calibration	
4	Concept generation for design proposal	
5	Mass modeling for design proposal	
6	Land use modeling for design proposal	
7	Land use modeling for design proposal	
8	Elementary presentation	
9	Elevations modeling for design proposal	
10	Elevations modeling for design proposal	
11	Sections modeling for design proposal	
12	Pre final presentation	
13	Perspective modeling for design proposal	
14	Perspective modeling for design proposal	
15	Perspective modeling for design proposal	
16	Final presentation	
Half-Year Break		
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 Architectural Engineering Dept.
 Stage:5th.

Detailed Description of Thesis(1)

Title of Subject	Thesis(1)		Theoretic Hour/week	Practical Hour/week
			2	6
			Credits:	5
Code No.	ENAR-503			
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	This course aim to develop student's ability to conduct studies that precedes the design processes as; information collection, information analysis ,then conclusions relating to building design problem which will use later as basis for creating ideas, design decisions on the thesis project (2).			
Course Description	This course interested in the process of preparing thesis (design project) report .it focus at this stage on research aspect, so that the thesis in fifth class is more inclusive and deeper than in previous classes compared to project design standard, which will include detailed studies on, planning and design of the project in all its aspects, as well as study of systems for services and environmental compatibility and methods of construction and installation of buildings to suit the specificity of each project.			
Textbook	Does not have a textbook, but several references(books and articles)			
References				
Course Assessments	Yearly work		Final Exam	
	%70		%30	

Course Weekly Outline

Week	Topics Covered	Notes
1	Architecture and planning analytical study of the project and information collection, maps, this include: - The importance of the project in the city, and the approximate initial size of the project in comparison with similar examples. - Site selection and give alternatives, justifications of choice. - Study of the site, dimensions, size, neighborhood, the surrounding land uses, roads and entrances, the environmental study and construction of the site; determine the objectives of solving the problems of the site Analyzing the physical elements of the site. Site Analysis/ analyzing the non-physical elements of the site. Studying the architectural Concepts related to the site contents. - The initial submission of the first stage (location and size).	
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4	Aanalytical study design of the project include: An analytical study of similar examples of local, Arab and international (the study of theory familiar to understand the nature of the project ,relationships of different parts to each other and recognize the problems with the design). - Study the components of the project and the relationship between these components. Analyzing the relationship between Spaces according to the movement and clustering. Analyzing the relationships between the project spaces by using Matrix. The Bubble Diagram of the project and the spatial zoning schemes. Site Analysis - Analytical Study of the platform and space required external and internal - Study of furniture and basic supplies for the project.- Presentation	
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7	The special problem,Each student is directed to study a new trend (linked to his project) like high tech. and Sustainable Architecture	
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9	Study systems include: - A structural study (structural systems used in this type of projects, forms materials, and the impact of the proposed materials on the form of product identity, and the relationship to the city. - Study of environmental (impact of the environment on the project and the project's impact on the surrounding environment) Study of engineering services systems on the project (services, electrical, air conditioning, entrances and exits of safety and security). - The initial submission of the third stage (of structural systems and services).	
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11	Spatial zoning on the site to offer solutions and design alternatives include: - Submission of the pre-final (with the site analysis and identification of the main entrances and traffic regulations required within the site). - An initial zoning of the components of the project on the site, finding alternatives to preliminary design ideas.	
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14	Final submission of a thesis.	
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Stage:5th.

Detailed Description of Architectural Criticism Theories

Title of Subject	Architectural Criticism Theories			Theoretic Hour/week	Practical Hour/week
				2	
	Credits:	2			
Code No.	ENAR-504				
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	Increasing student's knowledge about the process of architectural criticism according to previous and recent methods.				
Course Description	Theoretical course related with studying definition , importance and methods of architectural critic .				
Textbook					
References	جدو ، بنار (المذاهب الفكرية الحديثة والعمارة :بحث في مناهج النقد المعماري)1993 الدهوي ، سهى (سلطة النص في النقد المعماري الاكاديمي) 2007 الغذامي ، عبدالله (تشريح النص) 1987 بونتا، خوان بابلو (العمارة وتفسيرها: دراسة للمنظومات التعبيرية في العمارة) 1996 -(Architectural Criticism and Journalism : Global Perspectives) proceeding of international seminar 2005				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	Definition , importance and classifications (field, class ,nature of aims, nature, and fact)	
2	Aspects of critical process and it's affecting factors .	
3	Criticism Criteria .	
4	Sub activities in criticism process .	
5	Classifications of criticism(contextual and textual criticism).	
6	Contextual criticism Ethical approach .	
7	Psychological approach	
8	Social approach .	
9	Phenomenological method .	
10	Textual criticism.... Semiology	
11	Structuralism .	
12	Deconstruction .	
13	Examination	
14	Discussion	
15	Discussion	
16	Discussion	
Half-Year Break		
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Stage:5th.

Detailed Description of Contemporary Iraqi Architecture

Title of Subject	Contemporary Iraqi Architecture			Theoretic Hour/week	Practical Hour/week
				2	
				Credits:	2
Code No.	ENAR-505				
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	The definition of changes happened in modern Iraqi architecture specifically after 1921 . Perception the modern architectural styles through studying special characteristic for each style , which are represented by special projects that presented by pioneers Iraqi architects or foreigners architects which designed known special projects in Iraq .				
Course Description	The subject is theoretical and it is continual during the first semester /two hours weekly.				
Textbook					
References	Modern architecture in iraq / Akeel N.Mulla Hiwaish / Baghdad / 1988				
Course Assessments	Yearly work		Final Exam		
	%40		%60		

Course Weekly Outline

Week	Topics Covered	Notes
1	General introduction about Iraqi architecture before 1921	
2	The period of establishing the modern Iraqi architecture	
3	The effective factors on Iraqi built environment changes	
4	International factors on modern architecture in Iraq	
5	Modern architectural styles in Iraq,Local traditional architecture style	
6	Modern architectural styles in Iraq,Abstracted traditional architecture style	
7	Modern architectural styles in Iraq,Decorated traditional architecture style	
8	Modern architectural styles in Iraq,Traditional architecture sympathy with international trend style	
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10	Modern architectural styles in Iraq ,Architecture sympathy with international trends style	
11	Local particularity between tradition and modernism	
12	Discussion of modernism architectural samples	
13	Discussion of modernism architectural samples	
14	Discussion of modernism architectural samples	
15	Quiz	
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Half-Year Break		
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Stage:5th.

Detailed Description of Contemporary Arab Architecture

Title of Subject	Contemporary Arab Architecture		Theoretic Hour/week	Practical Hour/week
			2	
			Credits:	2
Code No.	ENAR-506			
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>	
Course Objective	Building a database for Contemporary Arab architecture (theory and practice) and the pursuit of identity and create a balance between authenticity and heritage on the one hand and modern techniques and the expression of time and place.			
Course Description	An article Theory two hours a week dealing with two axes, first the theory and directions of contemporary architecture in Arabian countries and reality of urbanization in the Arab countries and its identity, and intellectual and philosophical architects ideas of contemporary Arab architecture and Axis II of the application and architecture examples.			
Textbook				
References				
Course Assessments	Yearly work		Final Exam	
	%40		%60	

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	Definition of the topic. And requirements, the report.	
18	Architecture since the end of the nineteenth century to World War I (Ottoman)	
19	Architecture since World War I and World War II (colonialism)	
20	Architecture since World War I and World War II (colonialism)	
21	Traditionalists People ,Architecture without architects	
22	Architect Hassan Fathy and the most work	
23	Directed projects within the People's Architecture	
24	Traditional, conservative trend ,Quiz	
25	Examples of projects	
26	The New classical Islamic Architecture	
27	Contemporary modern trend	
28	Test	
29	Contemporary Architects	
30	High-Tec Trend	
31	Architecture in the Arab Gulf ,Examples and projects	
32	Reports Discussion	

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Stage:5th.

Detailed Description of Specifications & Estimation

Title of Subject	Specifications & Estimation			Theoretic Hour/week	Practical Hour/week
				2	
	Credits:	2			
Code No.	ENAR-507				
Offering Semester	First semester <input checked="" type="checkbox"/>	Second semester <input type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	The primary objective of the Specifications & Estimation course is to give every student awareness and understanding of the conceptual framework and knowledge base of practice in order to facilitate the transition from professional school to professional practice				
Course Description	This subject covers the various aspects of estimating of quantities of items of works involved in buildings. This also covers the rate analysis, valuation of properties and preparation of reports for estimation of various items. At the end of this course the student shall be able to estimate the material quantities, prepare a bill of quantities, make specifications and prepare tender documents. Student should also be able to prepare value estimates				
Textbook					
References	Specifications & Cost Estimate By Nasir Al- Assady , Univ. Of Baghdad Standard Methods for Preparing Bills of Quantities in civil, Services and architectural works, By Khalid Mohamed Hadeed, Baghdad , 2003				
Course Assessments	Yearly work		Final Exam		
	%30		%70		

Course Weekly Outline

Week	Topics Covered	Notes
1	General definitions	
2	Cost Estimates Basis	
3	Types of Estimation/ actual cost	
4	Building Material & Unit Measurements/ Brick	
5	Building Material & Unit Measurements/ Plastering	
6	Building Material & Unit Measurements/ Concrete	
7	Building Material & Unit Measurements/ I Beam section	
8	Wastes in Building Materials/ Quizzes	
9	Specifications & Bills of Quantities	
10	Standard Specifications	
11	technical Specifications	
12	Semester exam	
13	Bills of Quantities & Prices	
14	Total Bills of Contract Costs	
15	Contract ors Suggested Alternatives	
16	General Preview	
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Stage:5th.

Detailed Description of Professional Practice

Title of Subject	Professional Practice			Theoretic Hour/week	Practical Hour/week
				2	
	Credits:	2			
Code No.	ENAR-508				
Offering Semester	First semester <input type="checkbox"/>	Second semester <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>		
Course Objective	The primary objective of the Professional Practice course is to give every student awareness and understanding of the conceptual framework and knowledge base of practice in order to facilitate the transition from professional school to professional practice, and an understanding of the role of the architect in society.				
Course Description	The course presents an overview contemporary context and complexities of architectural practice and the varied and evolving roles and responsibilities of the architect with an emphasis on the characteristics of best practices. the course focuses on architects, clients, and society, developing an understanding of professionalism through an examination of the development of the profession; educational preparation; internship; laws pertaining to registration; client relationships; ethics and professional judgment, diversity issues in practice; organizational and management issues including firm formation, legal organization, firm structure.				
Textbook	Environmental physics in construction,(its application in architectural design),Erich Schild,Granada,2002				
References	Professional Practice and Code of Prof. Ethics By Nasir Majeed Al Asady The Law & the Internal System of Iraqi Engineers Union General conditions for contracting , Ministry of Local Government				
Course Assessments	Yearly work		Final Exam		
	%30		%70		

Course Weekly Outline

Week	Topics Covered	Notes
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Half-Year Break		
17	General definitions.	
18	The architect and his basic duties	
19	The making of the architect and his obligation	
20	Elements of the building felid	
21	Grading of architect	
22	Professional organizations	
23	Code of professional ethics	
24	The architect and his services	
25	Methods of paying the architect	
26	Selection of the architect	
27	Architectural competitions	
28	Semester exam	
29	Architectural professional services agreement	
30	Types of contracts	
31	Bidding and contracting legal document	
32	General conditions	