

FUE - Future University in Egypt

Faculty of Engineering and Technology Department of Architectural Engineering

Course Specifications

ARC 312: Architectural Design (4)

Programme (s) on which the course is given:	B.Sc. in Architectural Engineering
Major or minor element of programmes:	(Not Applicable)
Department offering the programme:	Architectural Engineering
Department offering the course:	Architectural Engineering
Academic year/Level:	Level Three – 6 th semester
Date of specification approval:	September 2019

A- Basic Information

Title: Architectural Design (4)	Code: ARC 312
Credit Hours:	4 Cr. Hrs.
Lectures:	2 Hrs.
Tutorial:	6 Hrs.
Total:	8 Hrs.
Prerequisite:	ARC 311: Architectural Design (3)

B- Professional Information

1- Catalog Course Description:

The main concern and focus of this course will be about the different methods of "Form Generation". The priority will be for using advanced structure systems as the main tool to generate advanced and sophisticated forms. The course concerns the development of the students' sense of structure to generate architectural concepts and forms. The course projects may be such as: Design Center, Club House, Religious Complex, Rest House, Bus/railway Station, Indoor Sports Hall, and other similar ones.

2- Overall aims of the course:

Upon successful completion of the course, the student should be able to:

1. Develop design process awareness (including data gathering and analysis) Share ideas and work in a team or a group
2. Develop drawing and representation techniques
3. Develop awareness of circulation systems, structures, lighting and form as applied to medium scale buildings.
4. Organize and articulate form and space that satisfy both functional and aesthetic requirements
5. Establish design and evaluation criteria
6. Test different design alternatives

3- Intended learning outcomes of course (ILOs):

3.1. Program ILOs related to course:

A04 Demonstrate knowledge and understanding of the principles and theories of architectural design and planning, as process and product

A23 Demonstrate knowledge and understanding of the principles of sustainable design and climatic considerations in addition to the different elements of the natural environment, different energy types, appropriate environmental control techniques and different technical installations in buildings

A05 Demonstrate knowledge and understanding of design problems, list clients' needs & requirements and gather relevant information

B02 Compare, analyze and criticize different engineering problems and case studies, evaluate design alternatives and conclude results based on analytical thinking

B07 Solve architectural problems often on the basis of limited and possibly contradicting information

B14 Explore and think of design forms in two and three dimensions engaging images of places and time with innovation and creativity

B17 Integrate relationship of structure, building materials, and construction elements into design process.

C01 Ability to integrate knowledge and understanding of mathematics, science, art, information technology, design and engineering concepts to design and plan buildings and to solve problems

C04 Use different expression techniques to visualize ideas verbally and graphically, either manually or digitally

C18 Display imagination and creativity.

D02 Work under stressful environments and within constraints of time and budget

D06 Manage tasks and resources

D07 Search for information and adopt life-long self-learning

3.2. Intended learning outcomes of course (ILOs):

a- Knowledge and understanding:

By the end of this course the student should maintain a moderate proficiency level at:

- a1. Defining the theoretical bases upon which moderate scale structures and recreational accommodation buildings are designed.
- a2. Explain the relations between design problem variables and inputs in the case of moderate scale structures and recreational accommodation buildings.
- a3. Defining the principles of building technologies, including the application of structures, construction methods, and materials in relation to human needs related to moderate scale structures and recreational buildings.
- a4. Explaining the environmental aspects that affect the project quality in the case of moderate scale structures and recreational buildings.

B- Intellectual skills:

By the end of this course the student should maintain an moderate proficiency level at:

- b1. Using analytical thinking methods to define complex design problems.
- b2. Using creative thinking methods to propose different matured and enhanced design alternatives.
- b3. Evaluating design alternatives professionally.
- b4. Deducing the detailed requirements and architectural project program in the case of public buildings, according to the user behavior, site limitations, availabilities and function needs.

b5. Generate design concepts based on the structure system as a form generator.

C- Professional and practical skills:

By the end of this course the student should maintain an moderate proficiency level at:

- c1. Express creative and innovative solutions of the design problem
- c2. Designing wide span buildings with forms inspired by its structures in light of the social, aesthetic and technical requirements.
- c3. Using proper presentation techniques to represent his/her final design proposal.

D- General and transferable skills:

By the end of this course the student should maintain a moderate proficiency level at:

- d.1. Expressing his/her ideas by visual, graphic, written and verbal means
- d.2. Search for relevant information.
- d.3. Managing time and meet deadlines

4- Course ILOs versus Program ILOs relation

See Appendix, table [1]

5- Course Contents:

#	Topics	Lec.	Tut.	Total
1	Data collection and data review	2	6	8
2	Data Analysis	2	6	8
3	Site analysis and Concept	2	6	8
4	Research submission	2	6	8
5	Conceptual design follow up	2	6	8
6	Form and Composition	2	6	8
7	Master plan	2	6	8
8	First submission	2	6	8
9	Follow up	2	6	8
10	Detailed architectural drawings	2	6	8
11	Second submission	2	6	8
12	Detailed architectural drawings	2	6	8
13	Semi final submission	2	6	8
14	Project finishing	2	6	8
15	final submission	2	6	8
Total		30	90	120

For the relation between the course contents and "Intended Learning Outcomes" (ILOs) see Appendix, table [2]

6- learning/teaching methods:

See Appendix, table [3]

7- ILOs Teaching & Assessment Method

See Appendix, table [4]

8- Weighting of assessments

- Final exam:.....40%
- Year's work:
 - In Class Quizzes.....20%
 - Studio work.....30%
 - Participation.....10%

9- List of references:

1- Text Book:

- Charleson; Andrew, **Structure As Architecture: A Source Book for Architects and Structural Engineers** 2nd Edition, 2014

2- Recommended Readings:

- 3- Ramsey, C.; Ray, J. & Hoke, Jr.
Architectural Graphic Standards/Tenth Edition, AIA. John Wiley & Sons Inc., 2000, NJ. USA
/AIA. John Wiley & Sons Inc.
- Chiara, J.:
Time Saver Standards for Architectural Design, Most recent metric version
- Francis D.K. Ching:
Architecture: Form, Space and Order.
- Architectural Magazines and Projects
- Periodicals & Web sites:
 - Architecture
 - Architectural Record
 - Architectural Review
 - Architecture d'aujourd'hui
 - www.architecturalrecord.com
 - www.greatbuildings.com

10- Facilities required for teaching and learning:

- Design Studios
- White board
- Computer & Data show for presentations
- Architectural Library
- Internet Connection

Course coordinator: Prof. Dr. Samir Sadek Hosny
Head of Department: Prof. Dr. Samir Sadek Hosny
Date: September 2019

Appendix (1)

Table [1]: Course ILOs/ Program ILOs Matrix

		Program ILOs												
		A04	A05	A23	B02	B07	B14	B17	C01	C04	C18	D02	D06	D07
Course ILOs	a1.	•												
	a2.		•											
	a3.			•										
	a4.			•										
	b1.				•									
	b2.						•							
	b3.					•								
	b4.					•								
	b5.							•						
	c1.										•			
	c2.								•					
	c3.									•				
	d1.											•	•	
	d2.											•		•
d3.												•		

Table [2]: Course Content/ILO Matrix

Topic	a1	a2	a3	a4	b1	b2	b3	b4	b5	c1	c2	c3	d1	d2	d3
Projects data collection, site visits and data review	•	•	•					•		•		•	•	•	•
Data Analysis	•	•	•	•	•	•		•	•	•		•	•	•	•
Site analysis and Design Concept	•	•	•	•	•	•	•	•		•	•	•	•		•
Form and Mass generation	•		•	•	•	•	•		•	•	•		•		•
Development and follow up	•			•			•		•	•	•		•		•
Final presentation, finishing and representation of researches									•	•	•	•	•		•

Table [3]: Teaching Method/ILO Matrix

Teaching Method	a1	a2	a3	a4	b1	b2	b3	b4	b5	c1	c2	c3	d1	d2	d3
Lecture	•	•	•	•	•	•	•	•	•						
Research		•	•	•	•	•	•	•	•	•		•	•	•	•
Sketch Designs		•	•	•	•	•	•	•	•	•	•	•	•		•
Group Discussion					•	•	•	•	•				•	•	•

Table [4]: Assessment Method/Course ILO Matrix and Final Exam Blueprint

Assessment	Mark	a1	a2	a3	a4	b1	b2	b3	b4	b5	c1	c2	c3	d1	d2	d3
Participation	10													•	•	•
Sketch Design(s) - submissions	30	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Final Project	20	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Final Examination	40	•	•	•	•	•	•	•	•	•	•	•	•	•		•
Final Exam Mark Distribution		(5-7)				(13-15)					(15-20)			(3-5)		