FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Elective 9 / Innovative Architecture & Technologies

Information :

Course Code :	ARC E09	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Architectural Engineering

Area Of Study :

Upon successful completion of the course, the student should be able to:
ÅGain knowledge related to innovative approaches in environmental design and sustainability applications while still considering local climates, and social, and cultural environments.
ÅDemonstrate understanding of the wider sustainability concepts (Environment is not only subject to buildings)
ÅUse gained knowledge to support environmental design concepts.

Description :

Energy efficiency in buildings, New & renewable energy, Air / water / solar energy in architecture, Sustainable Architecture, Green Architecture. New materials and technologies. Case studies.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	a.1. Define the principles of sustainability in architecture and landscape, as process and product.
2 -	a.2. List some of building construction systems which relate to buildingôs climatic adaptation such as kinetic architecture.
3 -	a.3. Define special technologies and detailing of adaptation methods, such as, double skin buildings, Energy Efficiency technologies, green roofs and walls, etc.
4 -	a.4. Explain sustainable design and climatic considerations in relation to the different elements of the natural environment, different energy types, appropriate environmental control techniques and different technical installations in buildings
5 -	a.5. Explain the social environmental considerations and human factors affecting the exercise of the architectural and landscape design decisions.
6 -	a.6. Explain contemporary environmental approaches such as biomimicry, biophilic, ecological design etc.
b.Intellectual Skills: :	
1 -	b.1. Differentiate environmental architectural problems often on the basis of limited and possibly contradicting climatic information
2 -	b.2. Use creative thinking methods to integrate passive design solutions and zero energy concepts in relationship to building materials, and construction elements into design process.
3 -	b.3. Evaluate possible energy efficiency alternatives to propose design solutions.
4 -	b.4. Criticize informed innovative opinions.

c.Professional and Practical Skills: :	
1 -	c.1. Design architectural projects that present solutions to climatic and environmental problems
2 -	c.2. Create 2D and 3D sketches to analyze possible case studies
3 -	c.3. Use presentation techniques to present case study analysis and design proposals
4 -	c.4. Build simple physical models that show innovative environmental solutions
5 -	c.5. Provide academic research techniques in terms of searching and analyzing academic
d.General and Transferable Skills: :	
1 -	d1. Express ideas by visual, graphic, written and verbal means
2 -	d2. Discuss and defend ideas
3 -	d3. Manage time and meet deadline
4 -	d4. Search for relevant information
5 -	d5. Communicate effectively with peers and teamwork management

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	4	2	2
Innovative Environmental Architecture Approaches	8	4	4
Sustainability in Egyp	4	2	2
Kinetic Architecture	12	4	4
Sustainable Landscape Design	8	4	4
Green Roofs	8	4	4
Towards Zero Energy Architecture	8	4	4
Re-design Project	12	6	6

Teaching And Learning Methodologies :

Lecture
One to one discussion
Group discussion
Research presentation
Poster designs
Physical Maquette

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments/Studio work	35.00		
Final exam	40.00		
In Class Quizzes	15.00		
Participation	10.00		

Recommended books :

a) Carbon-neutral Architectural Design by Pablo La Poche, 2012.
b) Green Building- Guidebook for Sustainable Architecture, by Michael Bauer, Peter Masle, and Michael Schwarz, 2010.
c) Kinetic Architecture ï Designs for Active Envelopes, by Russell Fortmeyer and Charles Linn, 2014.
d) Sustainable Landscape Construction: A Guide to Green Building Outdoors, by William Thompson and Kim Sorving, 2nd ed, 2007