Faculty of Engineering & Technology

Environmental Control & Technical Installations 2

Information :

Course Code :	ARC 362	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department : Department of Architectural Engineering

Instructor Information :

Title	Name	Office hours
Professor	Mohamed Saad Atwa Saad	1
Professor	Mohamed Saad Atwa Saad	1
Assistant Lecturer	Amr Mamdouh Mahmoud Mohamed Ali	1
Teaching Assistant	ETHAR ESSAM MAHMOUD ALY ELSHINAWY	1
Teaching Assistant	Mohamed Maher Mohamed Abd El Monem Ahmed	1
Teaching Assistant	Nermine Ashraf Abdelhady Ahmed Fathallah	
Teaching Assistant	Nouran Ashraf Ali Abdeltawab	1

Area Of Study :

At the end of this course, the students will be able to:
1. Understand the conduct of thermal analysis and acoustics inside the building.
2. Evaluate various environmental measures in buildings so that architecture becomes more responsive to surrounding environment.
3. Recognize the basis of the following building services: Artificial Lighting, HVAC Systems (Heating, Ventilation, and Cooling) Installations, and Security Installations.
4. Implement the basis of designing the various related building services that should be regarded during the Design Development Phase.
5. Develop specific skills and professional attitude towards understanding and managing problems that might occur during the construction process.
6. Coordinate the different building services required with various team members from other specialties.

Description :

Energy and the thermal environment, Environmental indicators, Thermal comfort criteria and indices, Heat transfer, Storage and insulation, Air conditioning and ventilation, Heating and cooling loads, Central distribution and package units Mechanical ventilation, Heating appliances and systems, Artificial lighting mechanism, Light sources and luminance design, Nature of acoustics, Weighted pressure levels, Sound analysis, Comfort and noise indices, Acoustic design and noise control.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Gain knowledge and experience with the key principles of thermal and acoustical design requirements.
2 -	Outline building parameters affecting thermal and acoustic analysis.

3 -	Gain knowledge and experience with the key principles of designing various related building services.
4 -	Evaluate and coordinate previously defined services requirements early in the project.
b.Intellectual Skills: :	
1 -	Analyze various environmental factors related to lighting, thermal and acoustic comfort according to the function of the space inside.
2 -	Define suitable techniques in controlling a the environment inside a building.
3 -	Analyze and criticize existing projects using principles of studied services.
4 -	Suggest improvements on existing projects based on gained knowledge and experience.
5 -	Estimate the required environmental control techniques and required technical installations for various types of buildings.
c.Professional and Practical Skills: :	
1 -	Use a consultant approach towards evaluating projects.
2 -	Use gained knowledge and required services basis to support the architectural design through the introduction of such services from the beginning of the project.
3 -	Co-ordinate the various technical installations with the different team members from other engineering fields.
d.General and Transferable Skills: :	
1 -	Work effectively with a team.
2 -	Manage time under stress.
3 -	Develop scientific reasoning.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
1- Course Introduction	3	2	1
2- Energy and the thermal environment / Environmental indicators, Thermal Comfort, Heat Transfer, Storage, & Insulation	3	2	1
3- Architectural Acoustics	6	4	2
4- Mid-Term Exams / Researches Presentations	6	4	2
5- Artificial Lighting, light sources, & luminance design	6	4	2
6- Heating & Ventilation	3	2	1
7- Air-conditioning	9	6	3
8- Daylighting Studies	3	2	1

Teaching And Learning Methodologies :

Lectures.

Research assignments.

Information collection from different sources.

Experiments.

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
1st Quiz	5.00		
1st Research	10.00		
2nd Quiz	5.00		
2nd Research	10.00		
3rd Quiz	5.00		
4th Quiz	5.00		
Attendance and Participation	10.00		
Final Exam	30.00		
First Mid-Term Exam	10.00		
Second Mid-Term Exam	10.00		

Books :

Book	Author	Publisher
Master Handbook of Acoustics	F. Alton Everest	McGraw-Hill

Course Notes :

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Recommended books :

 “Environmental Design: CIBSE Guide A”, 7th Edition, CIBSE, (2006)
 “Architectural Acoustics”, Marshall long, Elsevier Academic Press, (2006)
 “Building Systems for Interior Design”, Corky Bingelli, John Wiley & Sons, Inc. (2003)
 “Building Services Handbook”, Fred Hall & Robert Greeno, Fourth Edition, Butterworth-Heinemann, Elsevier Ltd, (2007).

Periodicals :

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Web Sites :

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