Faculty of Engineering & Technology

Environmental Control & Technical Installations 1

Information :

Course Code :	ARC 361	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department :	Department of Architectural Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	MOHAMED MAHMOUD SAYED MAHMOUD SALEH	

Area Of Study :

Upon successful completion of the course, the student should be able to:
1. Investigate, evaluate and optimize the sound performance of simple architectural spaces.
2. Suggest proper mechanical systems to enhance and fulfill the needs of a moderate complex building regarding vertical and horizontal circulation, firefighting, and sanitary services.

Description :

This course starts with the definition of the environment (natural and man-made) and its components. Then, it focuses on the "Room Acoustics". Many related topics will be introduced such as: nature of acoustics, weighted pressure levels, sound analysis, comfort and noise indices, acoustic design and noise control In addition, the course addresses the main mechanical systems that are used in buildings to achieve vertical and horizontal circulation. Also, this course includes the hydraulic services that serve the user needs such as: water supply, sewerage, sewer and rainwater drainage, sanitary installations, firefighting, solid waste disposal.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Define acoustics principles and theories.
2 -	List some methods and techniques of sound control.
3 -	List some digital software of acoustics analysis.
4 -	Define the differences between one pipe, two pipes, and three pipes plumbing systems.
5 -	List some techniques of firefighting systems.
6 -	List some of vertical and horizontal circulation mechanical systems.
b.Intellectual Skills: :	
1 -	Analyze the impact of space shape and finishing of the acoustics performance.
2 -	Choose the proper digital software of acoustics analysis.
3 -	Choose the proper plumbing system of a building.
4 -	Evaluate the results of the analytical studies and conclude with architectural solutions and design requirements

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c.Professional and Practical Skills: :	
1 -	Design a plumbing system: cold and hot water supply, sewage, and storm water discharge, of a moderate complex building to achieve efficient resources usage.
2 -	Apply digital software to analyze and evaluate the acoustics performance of a building.
d.General and Transferable Skills: :	
1 -	Search for relevant information.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Acoustics: definitions and theories	6	4	2
Acoustics: design faults and problems	6	4	2
Acoustics: how to control and manipulate the space	6	4	2
Mechanical systems: horizontal circulation	6	4	2
Mechanical systems: vertical circulation	6	4	2
Plumbing systems	9	6	3
Firefighting systems	6	4	2
TOTAL	45	30	15

Teaching And Learning Methodologies :

Lecture

Research and Assignments

Project

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments/Studio work	25.00		
Final exam	40.00		
In Class Quizzes	10.00		
Performance & Participation	10.00		
Project	15.00		

Recommended books :

a. Sassi, Paola. Strategies for sustainable architecture. Taylor & Francis, 2006.
b. Descottes, Herv®, and Cecilia E. Ramos.Architectural lighting: designing with light and space. Princeton Architectural Press, 2013.
c. Bauer, Michael, Peter Mº sle, and Michael Schwarz. Green building: guidebook for sustainable architecture. Springer Science & Business Media, 2009.
d. International Plumbing Code
e. NFPA
f. SMACNA

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