



**Jordan University of Science and Technology**  
**Faculty of Architecture And Design**  
**Architecture Department**

ARCH456 Mechanical Systems
First Semester 2023-2024

<b>Course Catalog</b>
2 Credit Hours. This course discuss the mechanical and electrical systems like: HVAC system, plumbing, vertical transportation, lighting, fire protection, communication and security systems that are required to maintain the necessary conditions of enhancing indoor environmental quality (comfort, health, safety) for the occupants of a building

<b>Text Book</b>	
<b>Title</b>	Building construction
<b>Author(s)</b>	Francis D.KI. Ching
<b>Edition</b>	3rd Edition
<b>Short Name</b>	1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
2	Heating Ventilating and Air conditioning, Analysis and Design	F.C McQuaiston, J.D.parker	3rd Edition	
3	Websites	-	1st Edition	
3	The construction of building	R.Barry	4th Edition	

<b>Instructor</b>	
Name	Mrs. Abeer Andrawes
Office Location	A3 L-1
Office Hours	Sun : 08:00 - 08:30 Sun : 10:00 - 11:00 Mon : 08:00 - 08:30 Mon : 11:00 - 12:00 Tue : 08:00 - 08:30 Wed : 08:00 - 08:30 Wed : 10:00 - 11:00 Thu : 08:00 - 09:00
Email	atandrawes7@just.edu.jo

<b>Class Schedule &amp; Room</b>
Section 1: Lecture Time: Wed : 08:30 - 09:30 Room: A3131

<b>Prerequisites</b>		
Line Number	Course Name	Prerequisite Type
2213530	ARCH353 Environmental Control Systems (1) Temperature And Humidity	Prerequisite / Study

<b>Tentative List of Topics Covered</b>		
Weeks	Topic	References
Week 1	Syllabus	
Week 2	Definitions: mechanical systems	
Weeks 2, 3	Thermal comfort: Definition, Why thermal comfort is important? Adapting to the thermal environment	
Week 3	Factors effecting on thermal comfort	
Week 4	Heating systems: 1-Forced air heating system 2- Hot water heating 3- Electric heating 4- Heating by solar energy	
Weeks 4, 5	Ventilation: 1-Definition 2-Types of ventilating (natural, mechanical)	
Week 5	3-Techniques for natural ventilation 4-Types of mechanical ventilation	
Week 5	Air conditioning systems: 1-Definition 2-Types of Air condition system: a-Window unit b-split unit	

Week 6	c-Central air conditioner package unit + Midterm exam	
Week 7	d-Chillers water systems	
Weeks 7, 8	Plumbing Fixtures+ presentation	
Weeks 8, 9	Water distribution system	
Weeks 9, 10	Sewage systems	
Weeks 10, 11	Aspects for bathrooms design	
Week 11	Lightning and electrical systems	
Week 12	Elevators and escalators	
Week 13	Escalators	
Week 14	security systems	
Week 15	Final Exam period	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
The students will be able to identify the concept of thermal comfort, the environmental and personal factors that are critical to human comfort by using textbook [1B.B9]	15%	
The students will be able to recognize the role of mechanical and natural ventilation strategies in maintaining a healthy indoor air climate by using textbook [1B.B9]	20%	
The students will be able to Select mechanical and natural systems /strategies for heating, cooling that appropriate to the scale and situation of the project by creating an essay in three groups [1B.B9]	20%	
The students will be able to illustrate electrical, plumbing, lightning, sewage, security systems that are deployed in buildings by using textbook [1B.B9]	40%	
The students will be able to identify the main aspects of bathroom design [1B.B9]	5%	

Relationship to Program Student Outcomes (Out of 100%)																									
A.A1	A.A2	A.A3	A.A4	A.A5	A.A6	A.A7	A.A8	B.B1	B.B2	B.B3	B.B4	B.B5	B.B6	B.B7	B.B8	B.B9	B.B10	C.C1	C.C2	C.C3	D.D1	D.D2	D.D3	D.D4	D.D
																100									

Evaluation	
Assessment Tool	Weight
Midterm exam	35%
Final exam	50%
Quizzes and presentation	15%

Policy	
Evaluation	Two exams will be held during the semester: 1-Midterm Exam 35% 2-quizzes and presentation 15% 3-Final Exam 50% Total 100%

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