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

ARCH262 Structural Analysis &Systems

First Semester 2023-2024

Course Catalog
3 Credit Hours. The structural engineering is an essential component of Architecture. The creativity and imagination of an architect come to reality by adopting a suitable structural system. Architects should understand the basic principles and concepts of structure in order to apply the structural system suitably. The course is designed to explain structural concepts clearly, using examples. The mathematical part of the course is formulated to establish a logical understanding of structural behavior, by passing the complexity of calculations. structural systems like a truss, space frame, plates, shell, tensile structure ?etc will be discussed. The conceptual development of the structural system will be explained with examples, case studies and possible architectural applications in contemporary architecture.

Text Book	
Title	Structural Analysis
Author(s)	Hibbeler
Edition	8th Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Design of reinforced concrete structures	Arthur Nilson,	12th Edition	
3	Structural Steel Design ASD Method	Jack C. McCormac	4th Edition	

Instructor	
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

Class Schedule & Room
Section 1: Lecture Time: Mon : 13:00 - 14:30 Room: CH2106

Prerequisites

Line Number	Course Name	Prerequisite Type
2212610	ARCH261 Engineering Mechanics	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	-Course syllabus	From **1**
Week 1	- Introduction to structural engineering 1-Definitions: structure, system,.....	From **1**
Weeks 1, 2	2-Classification of structures	From **1**
Week 2	3-primary structural elements	From **1**
Week 2	-Determinacy of beams	From **1**
Week 3	-Determinacy of Frames	From **1**
Weeks 3, 4	-Equilibrium equations	From **1**

Week 4	Plane and space trusses: Assumption for analysis of trusses, Arrangement of members of plane trusses.	From **1**
Week 5	Determinacy and stability of trusses	From **1**
Week 6	structural systems	From **2**
Weeks 6, 7	Building materials	From **2**
Week 7	properties Steel and concrete	From **2**
Week 8	steel as a building material	From **2**
Week 9	-High rise building	From **1**
Week 10	- Types of loads acting on structures -Types of failure in structures and ways for solving them	From **1**
Week 11	- Curved surface: Domes, Cylinder, and Saddle like Forms	From **1**
Week 12	Membrane and net structures	
Week 13	- shell structures	
Week 14	Tube structures	
Weeks 9, 15	week 9 midterm exam , 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 types of structures, basic structural elements in a simple building, role of these elements as parts of a whole, and their impact on stability by using textbook [1B.B5]	20%	
The students will be able to classify structures (trusses, beams and frames) with respect to stability and determinacy by using textbook [1B.B5]	20%	
The students will be able to analyze the determinate structure to compute the reactions and internal forces (axial, shear and moment) due to static loads by using textbook [1B.B5]	15%	
The students will be able to contrast different building materials by using textbook [1B.B8]	10%	
The students will be able to demonstrate systematic knowledge of developing architectural forms based on structural systems by creating an essay in groups of three [1B.B5]	20%	
The students will be able to recognize different types of structure systems (shell, tube, membrane,.....structures) by using websites [1B.B5]	15%	

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
												90			10										

Evaluation	
Assessment Tool	**Weight**
first exam	30%
second exam	25%
Hw	5%
Final Exam	40%

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

Date Printed: 2024-01-18