School of Fine Arts Design and Architecture / Architecture (English)

2023 - 2024 Academic Year

FUNDAMENTALS of STRUCTURE

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
FUNDAMENTALS of STRUCTURE	ARC1123780	Fall Semester	2+2	3	3

Prerequisites Courses	
Recommended Elective Courses	
Language of Instruction	English
Course Level	First Cycle (Bachelor's Degree)
Course Type	Required
Course Coordinator	Assist.Prof. Tahir AKKOYUNLU
Name of Lecturer(s)	Assist.Prof. Tahir AKKOYUNLU
Assistant(s)	
Aim	Define basic structural concepts, make students get a comprehension of working principles of structural systems with the help of practical applications, make students get a comprehension of the flow of forces in a structural system in relation to the system form, study basic principles of giving dimension to structural components.
Course Content	This course contains; 1.Definition of Structure, Structural Design, Loads,2.Forces and Force Systems,3.Equilibrium Concept and Equilibrium of Systems,4 Analysis of Determinate Structural Systems, Equilibrium of a Particle and Rigid Bodies,5 Plane Trusses, Pinned Frames,6 Loads, Concepts of Strength of Materials,7 Cross-Sectional Properties of Structural Members, Center of Gravity, Moment of Inertia,8 Mid-Term Exam,9 Bending and Shear in Simple Beams,10 Bending and Shear Stresses in Beams,11 Predesign and Design Processes, Schematic Design,12 Theory and Practice of Structural Concepts Toward the Occupation (MIM, ARC, ICT: Column Analysis and Design; EUT: Simple Machines I),13 Theory and Practice of Structural Concepts Toward the Occupation (MIM,ARC,ICT: Structural Connections; EUT: Simple Machines II),14 Sustainable Design.

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
1. Apprehends basic concepts of structural design.		
2. Learns interdisciplinary design principles of Architectural and Structural design .		
3. Learns basic principles of giving dimensions to structural components.		

Teaching Methods	
Assessment Methods	

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	1.Definition of Structure, Structural Design, Loads	
2	2.Forces and Force Systems	
3	3.Equilibrium Concept and Equilibrium of Systems	
4	4 Analysis of Determinate Structural Systems, Equilibrium of a Particle and Rigid Bodies	
5	5 Plane Trusses, Pinned Frames	
6	6 Loads, Concepts of Strength of Materials	
7	7 Cross-Sectional Properties of Structural Members, Center of Gravity, Moment of Inertia	
8	8 Mid-Term Exam	
9	9 Bending and Shear in Simple Beams	
10	10 Bending and Shear Stresses in Beams	
11	11 Predesign and Design Processes, Schematic Design	
12	12 Theory and Practice of Structural Concepts Toward the Occupation (MIM, ARC, ICT: Column Analysis and Design; EUT: Simple Machines I)	
13	13 Theory and Practice of Structural Concepts Toward the Occupation (MIM,ARC,ICT: Structural Connections; EUT: Simple Machines II)	
14	14 Sustainable Design	

Evaluation Methods	**Weight(%)**
Midterm Exam	50
General Exam	50

Resources

To be distributed by the lecturer.1. Why Buildings Stand up? Mario Salvadori
2. Statics and Strength of Materials for Architecture and Building Construction, Barry Onouye, Kevin Kane
3. Principles of Structures, Ariel Hanaor
4. Building Structures Illustrated
5. Form & Forces
6. Structural Elements for Architects and Builders