Marmara University Faculty of Architecture
School of Architecture and Design
2021-2022 Fall Semester

Course Title	**Code**	**Semester**	**Hour (T+P)**	**Credit**	**ECTS**
Material and Technology III	ARCH 305	5 (Fall)	2+2	3	4
Prerequisities	-				
Language of Instruction	English				
Course Type (Required / elective)	Required				
Course Coordinator	-				
Instructor /e-mail	Assist.Prof.Dr. H. Nur KIZILYAPRAK / nur.kizilyaprak@marmara.edu.tr				
Assistans	-				

Goals	Goals of the course are to gain knowledge about designing building elements and components, building construction methods and integration of building elements and components with the remaining sub-systems of the building, and to gain ability to use this theoretical knowledge within a design problem.	
Learning Outcomes	• To understand the relationship between the materials uses and the structural systems and its elements. • To gain abilities on examination of the materials and components that make up the building elements such as stairs and roofs. • To understand different construction techniques and materials of stair systems such as brick, stone, concrete, wood, steel and combined stairs. • To gain abilities to design the structural system of a roof. • To gain abilities to produce architectural detail solutions on the building envelope in the context of thermal, acoustic and water related problems.	
Course Content	Design and construction of building elements; vertical circulation systems (ramps and stairs), and roof systems (flat and sloping roofs). Constructional design requirements, performance criteria, resources. Design principles of building element systems. Traditional and advanced construction methods. Examination of all components with drawings and models in 1/50, 1/20, 1/10 and 1/5 scales.	
Assessment Criteria	**Assessment Components**	
	Weekly Studies	%20
	Mid-term	%40
	Final Exam	%40
	TOTAL	%100
Midterm grade: 50 **Final grade:** 50 **Course success:** 50		

WEEKLY TOPICS AND PREPARATIONS		
Weeks	**Topics**	**Initial Studies**
Week 1 **07.10.2021**	**No Class on department's decision**	
Week 2 **14.10.2021**	**Lecture:** Introduction & basic concepts of construction technology; vertical circulation system: Stairs & ramps (definitions, classifications, calculation principles)	-
Week 3 **21.10.2021**	**Lecture:** Stair systems with different materials (brick, stone, concrete, wood, steel and combined); stair balancing **Studio Work 1:** Stair balancing practice (Organizations of given stairs with 1st and 2nd balancing methods)	-
Week 4 **28.10.2021**	**National Holiday – Eve of Republic Day**	-
Week 5 **04.11.2021**	**Studio Work 2:** Analysis and drawing of a steel stair (1/20) (2 plan and 1 section drawing of the straight stair in Block 7)	-
Week 6 **11.11.2021**	**Lecture:** Stair classifications according to their structures (Directly sits on ground, supported from one side – cantilever, inclined slab, supported by beams) **Studio Work 3:** Stair drawing 2 (1/20 2 plans and 1 section) (RC stair design on a given building)	-
Week 7 **18.11.2021**	**Lecture:** Introduction of roof systems (Definitions and Classifications); Flat roof systems (Analysis, design principles and criteria) **Studio Work 4:** Analysis of a given flat roof parapet detail	-
Week 8 **25.11.2021**	MIDTERM	-
Week 9 **02.12.2021**	**Lecture:** Pitched roof (Definitions, classifications, design principles) **Studio Work 5:** Organization of the geometric form of a roof system (Hipped Roof - 1/50)	-
Week 10 **09.12.2021**	**Studio Work 6:** Roof system model (Gable roof - 1/50)	-
Week 11 **16.12.2021**	**Studio Work 7:** Roof system drawing (Gable roof - 1/50)	**Studio Work 6**
Week 12 **23.12.2021**	**Lecture:** Pitched roof (Insulation, ventilation, coatings, tin works) **Studio Work 8:** Drawing of a rainwater drainage system and detail of a given gable roof. (1/10)	**Studio Work 6-7**
Week 13 **30.12.2021**	**Lecture:** Pitched roof (Chimneys) **Studio Work 9:** Drawing of a chimney detail of a given gable roof. (1/10)	**Studio Work 6-7**
Week 14 **06.01.2022**	**Lecture:** Contemporary construction techniques (Long span structures) **Studio Work 10:** Analysis of a given long span structures	-
Week 15 **13.01.2022**	**Studio Work 11:** Roof system model (Long span structures - 1/50)	-
Week 16 **20.01.2022**	**Studio Work 12:** Roof system drawing (Long span structures - 1/50)	**Studio Work 11**

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ECTS / WORKING HOUR TABLE

Activities	Number of Weeks	Duration (Hour)	Working Hours
Duration of the Course (Including Exams: 14 x Total Weekly Course Hour)	16	4	64
Extracurricular Working Hour (Preparatory Work, Review,Internet studies etc.)	10	2	20
Midterm exam	1	4	4
Homeworks and Presentations	9	4	36
Final Exam	1	4	4
Working Hours in Total			128
Working Hours in Total / 30			4,27
ECTS Credit of the Course			**4**