

Marmara University, Faculty of Architecture and Design
Department of Architecture
2025-2026 Fall Semester

Course Title		Code	Semester	Hour (T+P)	Credit	ECTS
Material and Technology III		ARCH 305	5 (Fall)	2+2	3	4
Prerequisites		-				
Language of Instruction		English				
Course Type (Required / elective)		Required				
Course Coordinator						
Instructor /e-mail		Assoc. Prof. A.Tolga İLTER / tolga.ilter@marmara.edu.tr				
Assistans		Research Assistant Rumeysa Temel				
Goals	The aim is to provide the student with the foundation to design wood and steel building technologies based on system principles.					
Learning Outcomes	1. Having knowledge about the materials/components and performance requirements of timber and steel building/construction systems. 2. Gaining the ability to analyze the materials/components that make up timber and steel building/construction systems. 3. Gaining the ability to apply the knowledge gained for timber and steel building/construction systems. 4. Gaining the ability to express the elements that make up timber and steel building/construction systems with 2-dimensional and 3-dimensional architectural communication techniques. 5. Gaining the ability to design the joint details based on the performance requirements of the elements that make up the timber and steel building/construction systems.					
Course Content	Material and technology analysis of building systems; timber building construction (timber flooring, walls, and roof), steel building construction (steel flooring, walls, and stairs). Design principles of building element systems. Studio Work - Analysis, synthesis, of timber and steel building systems and and presentation of them using relevant techniques.					
Assessment Criteria	Assessment Components					
	Midterm Evaluation Components			% 40		
	Studio Works (5 submissions)-%20 Midterm (Single exam)-%20					
	Final Evaluation Components			% 60		
	Assignments (2 submissions) - %20 Studio Works (5 submissions) -%20 Final Exam (Single exam)- %20					
TOTAL			% 100			
Midterm exam – minimum passing grade: -						
Final exam – minimum passing grade 50						
Minimum passing grade for the course: 50						

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Weekly Topics and Preparations		
Weeks	Topics	Initial Studies
Week 1 25.09.2025	Theoretical Course: Introduction and Basic Concepts	
Week 2 02.10.2025	Theoretical Course: Timber building construction	
Week 3 09.10.2025	Studio work 1: 1/20 Timber structure design	For studio work details, see page 3. Assignment 1: For assignment details, see page 3
Week 4 16.10.2025	Studio work 2: Drawing of timber floor	For studio work details, see page 3.
Week 5 23.10.2025	Studio work 3: Drawing of 1/20 scale timber wall construction.	For studio work details, see page 3. The Submission of Assignment 1
Week 6 30.10.2025	Studio work 4: 1/20 Timber roof construction + Seminar	For studio work details, see page 3.
Week 7 06.11.2025	Studio work 5: 1/20 Timber roof construction + Seminar , 1/5 detail	For studio work details, see page 3.
Week 8 10.11.2023 16.11.2023	Ara Sınav -	
Week 9 20.11.2025	Theoretical Course: Introduction to Steel Structures, Concepts	
Week 10 27.11.2025	Theoretical Course: Steel Building Construction + Seminar	
Week 11 04.12.2025	Studio work 6: 1/20 Steel Structure Design	For studio work details, see page 3. Assignment 2: For assignment details, see page 3
Week 12 11.12.2025	Studio work 7: 1/20 Steel floor design	For studio work details, see page 3.
Week 13 18.12.2025	Studio work 8: 1/20_Drawing of steel wall construction.	For studio work details, see page 3. The Submission of Assignment 2
Week 14 25.12.2025	Studio work 9: 1/20_Designing of steel stair	For studio work details, see page 3.
Week 15 01.01.2025	New Year's Holiday	
Week 16 08.01.2025	Studio work 10: 1/20_Drawing of steel stair, 1/5 Detail	For studio work details, see page 3.
12.01.2026 25.01.2026	Final Exam -	

IN-TERM STUDIES

I. REQUIREMENTS FOR STUDIO WORKS

Studio work 1

Draw the schematic plan of the Art Workshop from the studio worksheet, showing the timber structural system plan and both cross-sections in a 1/20 scale.

Studio work 2

Draw the timber flooring plan and a section on the structural system plan and section of the Art Workshop drawn in studio work 1.

Studio work 3

Draw the 1/20 scale plan, section, and view of the timber skeleton exterior wall of the art workshop building specified in the sheet.

Studio work 4

Design the 1/50 scale plan of the timber roof of the art workshop building.

Studio work 5

Draw 1/50 scale plan and sections of the timber roof of the art workshop building and 1/5 scale eaves detail.

Studio work 6

Draw the steel structural system plan and the section in both directions of the schematic plan of the art workshop in the application sheet in 1/20 scale.

Studio work 7

Draw the steel flooring plan and section using the structural system plan and section of the art workshop drawn in Studio Work 1.

Studio work 8

Design the 1/50 scale plan of the steel staircase of the art workshop building.

Studio work 9

Draw a 1/50 scale plan and sections of the steel staircase of the art workshop building and a 1/5 scale detail of the starting point.

Studio work 10

Draw the 1/20 scale plan, section, and view of the steel skeleton exterior wall of the art workshop building.

II. ASSIGNMENTS

Assignment 1

Make a 1/50 scale physical model of the timber structured art workshop building which you have drawn the structural system, floor, and wall systems and submit it on 23/10/2025 (Week 5).

Assignment 2

Make a 1/50 scale physical model of the steel structured art workshop building which you have drawn the structural system, floor, and wall systems and submit it on 25/12/2025 (Week13).

References

ENGLISH REFERENCES:

- Allen, E. & Iano, J., Fundamentals of Building Construction: Materials and Methods, 7th Ed. Wiley, 2019.
- Blanc, A., Internal Components, Mitchell's Building Series, CRC Press, 2014.
- Ching, F. D. K., Building Construction Illustrated, 5th Ed. Wiley., 2014.
- Chudley, R., Construction Technology, Pearson Prentice Hall, 2005.
- Chudley, R. & Greeno, R. Advanced Construction Technology, Pearson Prentice Hall, 2006.
- Diamant, R., Industrialized Building, Liffle, 1968.
- Goetz, K-H, Timber Design and Construction Sourcebook, McGraw-Hill Publishing, 1989.
- Foster, S.J., Structure and Fabric Part I, Part II, Mitchell's Building Series, Taylor & Francis Group, 2017.
- Hardy, S., Roof Design, Mc Graw Hill, 1998.
- Mc Evoy, M., External Components, Mitchell's Building Series, B.T. Batsford Limited, London, 1991.
- Nashed, F., Exterior Wall Design, Mc Graw Hill, 1998.
- Orton, A., The Way We Build Now, Spon Press, 2001.
- Rich, P., Dean, Y., Principles of Element Design, Architectural Press, 1999.
- Smith, Ronald C., Principles and practices of light construction, Prentice-Hall, 1963.

TURKISH REFERENCES:

- Binan, M., Yapı Elemanları- çizimler-açıklamalar, İTÜ Mimarlık Fakültesi, 1983.
- Toydemir, N., Yapı Elemanı Tasarımında Malzeme, Literatür, 2000.
- Yücesoy, L., Temeller, Duvarlar, Döşemeler, YEM Yayın, 2007.

ECTS / WORKING HOUR TABLE

Activities	Süre (Hafta)	Süre (Saat)	Çalışma Saati
Duration of the Course	14	4	56
Extracurricular Working Hour (Preparatory Work, Review)	15	2	30
Assignments, Studio works	12	3	36
Midterm Exam	1	2	2
Final Exam	1	2	2
Working Hours in Total			126
Working Hours in Total / 30			4.2
ECTS Credit of the Course			4