

Course Title	Code	Semester	Hour (T+P)	Credit	ECTS
Material and Technology IV	ARCH 306	Spring (6th semester)	2 + 2	3	4
Pre-requisites	-				
Language of Instruction	English				
Course Type (Required / elective)	Compulsory				
Course Coordinator	Assist. Prof. Dr. H. Nur KIZILYAPRAK				
Instructor /e-mail	Assist. Prof. Dr. H. Nur KIZILYAPRAK, nur.kizilyaprak@marmara.edu.tr				
Assistan(s)	Res. Assist. Rumeysa TEMEL				

Goals	<p>The general aim of the course is to show that the successful realization of an architectural project depends on a successful constructional design (structural system, service systems, building elements, construction technologies) and that the architectural design concept should be compatible with the constructional design.</p> <p>The course aims to provide the basic skills necessary to design building elements in line with user needs and performance requirements, and to understand the strategies and techniques used in integrating building element systems with structural systems.</p>	
Learning Outcomes	<ul style="list-style-type: none"> • Students gain the ability to design a building as a system, together with its sub-systems. • Students can prepare the drawings of the structural system arrangement of a building with the appropriate content and drawing technique. • Students can prepare constructional project drawings of a building with appropriate content and drawing technique. • Students can prepare detail project drawings of a building with appropriate content and drawing technique. 	
Course Content	<p>Within the scope of Materials and Technology 4 course, students are asked to develop an open office, art gallery or store design on the lands given.</p> <p>The process of design includes preliminary project studies, structural system arrangements (with models and drawings), drawings of 1/50 scaled application project, analysis of 1/20 scale facade system detail including roof, vertical circulation, and foundation systems, designing of wet area and 1/5 scale details.</p> <p>Key points for the course:</p> <ul style="list-style-type: none"> • Materials and Technology 4 course is a student-centered studio course, and it is essential that students come prepared to the course, complete the expected work during the course and make submissions specified in the program on time. • Studies will proceed according to the schedule given below. • There is an 80% attendance requirement. Students who do not fulfill the attendance requirement are deemed unsuccessful and cannot submit a project at the end of the semester. <p>Limitations on the program of the project to be designed:</p> <ul style="list-style-type: none"> • Building function alternatives are limited to open office (topic 1), art gallery (topic 2) and store (topic 3). • Building will be designed as a total of 3 floors, including the basement floor, the ground floor, and the 1st floor. • Floor height: 3.50 m (from floor to floor) • It is expected that there will be a management unit in the buildings. • Kitchen and toilet should be designed for the wet area. • Vertical circulation for disabilities should be considered. 	
Assessment Criteria	Assessment Components	
	Midterm Grade	% 40
	Final Grade	% 60
	TOTAL	%100

WEEKLY TOPICS AND PREPARATIONS		
Weeks	Weeks	Initial Studies
Week 1 01.03.2023	Introduction: Explanation of the course content. Giving the subject and the land. Establishment of working groups. Studio Works & Discussions: PRELIMINARY DESIGN STAGE <ul style="list-style-type: none"> • Site Plan (1/200) • Case Studies • Preliminary Project Studies (1/200) 	Assignment: Site Plan (1/200), Case Study, Preliminary Project Studies (1/200)
Week 2 08.03.2023	Studio Works & Discussions: PRELIMINARY DESIGN STAGE <ul style="list-style-type: none"> • Site Plan (1/200) • Preliminary Project Studies (1/200) 	Assignment: Plans, sections, elevations (1/100)
Week 3 15.03.2023	Short Lecture: 1/50 Architectural Drawing Techniques Studio Works & Discussions: FINAL DESIGN STAGE <ul style="list-style-type: none"> • Plans, sections, elevations (1/100) • Structural system analysis (1/100) • Structural system drawings (1/50) 	Assignment: Plans, sections, elevations (1/100)
Week 4 22.03.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Structural system model (1/50) • Formwork plan & partial sections (1/50) 	Assignment: Structural system model (1/50)
Week 5 29.03.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Plans, Sections (1/50) • Elevations (1/50) & Façade examples and material researches 	Assignment: Plans, Sections (1/50), Elevations (1/50) & Façade examples and material researches
Week 6 05.04.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Plans, Sections (1/50) • Elevations (1/50) & Façade examples and material researches 	Assignment: Plans, Sections (1/50), Elevations (1/50) & Façade examples and material researches
Week 7 12.04.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Plans, Sections (1/50) • Elevations (1/50) & Façade examples and material researches 	Assignment: Plans, Sections (1/50), Elevations (1/50) & Façade examples and material researches
Week 8 19.04.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Roof system model (1/50) • Roof system drawings: Plan and sections (1/50) 	Assignment: Roof system model (1/50); Roof system drawings: Plan and sections (1/50)
Week 9 26.04.2023	Studio Works & Discussions: CONSTRUCTION DESIGN STAGE <ul style="list-style-type: none"> • Roof system model (1/50) • Roof system drawings: Plan and sections (1/50) 26–29 Nisan 2023 – YAPI FUARI - TÜYAP Fuar ve Kongre Merkezi	Assignment: Roof system model (1/50); Roof system drawings: Plan and sections (1/50)
Week 10 02-07.05.2023	MIDTERM SUBMISSION: Drawings: <ul style="list-style-type: none"> • Site Plan (1/200), • Architectural Plans (1/100) (Basement, Ground, 1st Floor) • As-Built Plans (1/50) (Basement, Ground, 1st Floor) • Sections (1/50) (2 sections) • Elevations (1/50) (Main Facades - 2) • Roof Plan (1/50) • Foundation Plan (1/50) Model: <ul style="list-style-type: none"> • Structural system model (together with vertical circulation system and roof construction) (1/50) 	
Week 11 10.05.2023	Short Lecture: System Detail and Point Detail Drawing Techniques Studio Works & Discussions: DETAIL DESIGN STAGE <ul style="list-style-type: none"> • System Detail (Plan-Sections-Elevation) (1/20) (from stair) 	Assignment: System Detail (Plan-Sections-Elevation) (1/20) & Technical Brochures for Materials
Week 12 17.05.2023	Studio Works & Discussions: DETAIL DESIGN STAGE <ul style="list-style-type: none"> • System Detail (Plan-Sections-Elevation) (1/20) (from stair) 	Assignment: System Detail (Plan-Sections-Elevation) (1/20) & Technical Brochures for Materials
Week 13 24.05.2023	Studio Works & Discussions: DETAIL DESIGN STAGE <ul style="list-style-type: none"> • System Detail (Plan-Sections-Elevation) (1/20) (from stair) 	Assignment: System Detail (Plan-Sections-Elevation) (1/20) & Technical Brochures for Materials
Week 14 31.05.2023	Studio Works & Discussions: DETAIL DESIGN STAGE <ul style="list-style-type: none"> • Point Details (1/10, 1/5, 1/2): <ul style="list-style-type: none"> ○ Roof – External Wall Connection ○ External Wall – Door / Window Connection ○ External Wall – Ground Floor – Basement Wall Connection 	Assignment: Point Details (1/10, 1/5, 1/2) Assignment: System model (1/20)

	<ul style="list-style-type: none">○ Basement Wall – Raft Foundation Connection● System model (1/20)	
Week 15 07.06.2023	Studio Works & Discussions: DETAIL DESIGN STAGE <ul style="list-style-type: none">● Point Details (1/10, 1/5, 1/2):<ul style="list-style-type: none">○ Roof – External Wall Connection○ External Wall – Door / Window Connection○ External Wall – Ground Floor – Basement Wall Connection○ Basement Wall – Raft Foundation Connection● System model (1/20)	Assignment: Point Details (1/10, 1/5, 1/2) Assignment: System model (1/20)
FINAL WEEK	FINAL SUBMISSION: Drawings: <ul style="list-style-type: none">● System Detail: Patial Section, Partial Elevation, Partial Plans (1/20)● Point Details (1/10, 1/5, 1/2)● Material Catalogue Folder Model: <ul style="list-style-type: none">● System Model (1/20)	

KAYNAKLAR

Kitaplar

- Aka, İ., “Betonarme Yapı Elemanları”, Birsen Yayınevi, 1987.
- Binan, M., “Ahşap Çatılar”, Birsen Yayınevi, 1990.
- Binan, M., “Ahşap Kapılar”, Yapı Endüstri Merkezi Yayınları, 1995.
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- Binan, M., “Yapı Elemanları, Çizimler ve Açıklamalar”, İTÜ Vakfı, 1986.
- Erol, A.İ., “Yapılarda Taşıyıcı Sistem” , Zonguldak Karaelmas Üniversitesi, 1997
- İzgi, U., “Pencere”, İstanbul Güzel Sanatlar Akademisi Yayını, 1980.
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- Sarı, A., “Merdivenler, Düşey Sirkülasyon Araçları”, Yapı Endüstri Merkezi, 1998.
- Toydemir, N., “Yapı Elemanı Tasarımında Malzeme”, Literatür, 2000.
- Türkçü, Ç., “Yapım”, Mimarlar Odası İzmir Şubesi Yayınları, 1997.
- Yücesoy, L., “Temeller, Duvarlar, Döşemeler”, Yapı Endüstri Merkezi Yayınları, 1998.
- McLeod V., 2010. Çağdaş konut mimarisinden detaylar, YEM Yayın
- İzgü U ve Aysel B. B., 2003. Kapılar 1-2, Yapı endüstri Merkezi Yayınları
- Demirarslan Ü., 2005. İnce Yapı Tasarlama İlkeleri ve uygulama yöntemleri, Kocaeli.
- Eldem Sedat H., 2009. Yapı, Devlet Güzel Sanatlar Akademisi, Birsen Yayınları, İstanbul.
- Çelebi R., 2018, Yapı Bilgisi
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- Ching F. D.K. , 2014, European Building Construction Illustrated
- Yücesoy L., 2001, Temeller-Duvarlar-Döşemeler
- Soygeniş M. Yapı 2-3-4
- Ekinci C.E. , 2014, Yapı
- Neufert, E., 2000, Yapı Tasarımı, Beta Basın Yayım, İstanbul.
- Kızıl, F., Şahinler, O., 2004, Mimarlıkta Teknik Resim, Yapı Yayın, İstanbul.

Dergiler

- DETAIL

Kataloglar

- YAPI KATALOĞU
- Yapı Endüstri Merkezi Yayın Bölümü, İstanbul.
- YAPI MALZEMELERİ KATALOĞU
- TMMOB Mimarlar Odası İstanbul Büyükşehir Şubesi, İstanbul.

Web-siteleri

- www.insaat-yapi.gen.tr
- www.yapitr.com
- www.yapirehberi.net
- www.yem.net

AKTS / ÇALIŞMA SAATLERİ TABLOSU			
Aktiviteler	Süre (Hafta)	Süre (Saat)	Çalışma Saati
Ders Süresi (sınavlar dahil 14xToplam haftalık ders saati sınavlar dahil)	15	4	60
Ders Dışı Çalışma Saatleri (Hazırlık çalışmaları, Eleştiri Ödevleri, İnternet Çalışmaları, vb.)	14	3	52
Ödev ve Sunumlar	14	1	14
Ara sınavlar	1	3	3
Final sınavı	2	3	6
Toplam Çalışma Saati			125
Toplam Çalışma Saati / 30			4,16
Dersin AKTS Kredisi			4