



**ESOGU Faculty of Art and Design  
Industrial Design Department  
COURSE INFORMATION FORM**

<b>SEMESTER</b>	FALL
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<b>COURSE CODE</b>	1411xxx	<b>COURSE NAME</b>	Material and Manufacturing Techniques I
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	Type	Language
1	2	0	0	2	3	COMPULSORY (X) ELECTIVE ( )	Turkish

COURSE CATEGORY				
Basic Education	Design	Natural and Applied Science	Social Science	Art
	X	X		

ASSESSMENT CRITERIA			
	Evaluation Type	Quantity	%
<b>MID-TERM</b>	1st Mid-Term	1	30
	2nd Mid-Term		
	Quiz	3	30
	Homework		
	Project		
	Report		
	Others (.....)		
<b>FINAL EXAM</b>		1	40

<b>PREREQUIEITE(S)</b>	-
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<b>COURSE DESCRIPTION</b>	<p>Within the scope of this course, it is aimed to provide students with the ability to select materials in the projects, by giving them the knowledge of material selection, processing and production methods. It follows the way of presentation and expression by associating it with existing products in order to help settle the material information for industrial product design. Within the scope of the course, the functional and aesthetic properties of materials such as polymer, wood, smart materials and biomaterials are taught.</p>
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<b>COURSE OBJECTIVES</b>	<p>The aim of this course is to learn the ways of choosing various materials in a new product, to be able to define which material properties have priority in different product parts or products, and to learn some functional and aesthetic qualities of different materials.</p>
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<b>ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUCATION</b>	<p>In the projects she develops conceptually, they achieve results on the basis of engineering based on interdisciplinary communication, use and test materials and manufacturing methods.</p>
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<b>COURSE OUTCOMES</b>	<p>The student taking this course;</p> <ol style="list-style-type: none"> <li>1. Comprehends the materials in general terms.</li> <li>2. Gain the skills to see the usage areas of materials and to understand related production techniques.</li> <li>3. Comprehends its place in industrial design by learning in detail the production techniques suitable for polymer, wood, smart materials and biomaterials.</li> <li>4. Gains information about materials and manufacturing methods based on interdisciplinary interaction.</li> </ol>
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<b>TEXTBOOK</b>	<ul style="list-style-type: none"><li>- Fındık, F. (2016). Malzeme ve Tasarım-Tasarım-Malzeme seçimi-Uygulama, Seçkin Yayınevi, Ankara.</li><li>- Van Vlack,L. (1990). Malzeme Bilimine Giriş, Birsen Yayınevi.</li><li>- Kıralp, S., Özkoç, G., Erdoğan, S., Çamurlu, P., Baydemir, T., Doğan, M., Plastikler, ODTÜ Yayıncılık, Ankara.</li><li>- Smith, W. F. (2001). Malzeme Bilimi ve Mühendisliği, Çev. Kınıkoğlu, N. G., Literatür Yayıncılık, İstanbul.</li></ul>
<b>OTHER REFERENCES</b>	<ul style="list-style-type: none"><li>- Ezdeşir, A., Erbay, E. (1999). Polimerler-I, Pagev yayınları.</li><li>- Akyüz, Ö. F. (2001). Plastikler ve Plastik Enjeksiyon Teknolojisine Giriş, Pagev Yayınları.</li></ul>
<b>TOOLS AND EQUIPMENTS REQUIRED</b>	

## WEEKLY COURSE SYLLABUS

WEEK	TOPICS
1	Material information
2	Material selection and classification of materials in design
3	Structure-material-production relationship in design & General properties of materials
4	Structure and properties of polymer materials (General properties of polymer materials)
5	Structure and properties of polymer materials (Thermoplastics)
6	Structure and properties of polymer materials (Thermosets, Elastomers)
7	Processing methods of polymer materials (Extrusion, Injection)
8	Mid-term
9	Processing methods of polymer materials (Blow molding, rotational molding, thermoforming, casting)
10	Other processing methods in polymer materials
11	Structure and properties of wood materials
12	Processing methods of wood materials
13	Materials and production methods used in furniture production
14	Smart materials and Biomaterials
15	Safety rules and equipment used in the material and model atelier
16	Final Exam

NO	PROGRAM OUTCOMES	Contribution Level		
		3	2	1
1	Within cultural, historical and artistic context the ability to integrate theoretical knowledge about production and consumption mechanisms into the design practice;			X
2	The ability to plan the design process, to choose and use appropriate methods and techniques;		X	
3	The ability to identify design problems and related sub-problems and to produce creative solutions with a critical and dialectical approach;			X
4	The ability to design in terms of spatial thinking using design principles and elements;			X
5	The ability to make applications in the interaction of aesthetics and function using design elements and means and to evaluate these applications;		X	
6	The ability to visualize and present using two and three dimensional design tools;			X
7	The ability to follow and apply technological developments, current design approaches, sustainable production methods, materials and innovations in the field of informatics in design projects;	X		
8	The ability to use field knowledge in industrial design projects by considering the needs and interests of the society and target users within the scope of environmental awareness, professional ethics and the laws;			X
9	The ability to carry out the design process effectively individually or in a team;			X
10	The ability to take an active role in discipline-specific or interdisciplinary studies at the national and international levels.			X

**1: None. 2: Partial contribution. 3: Complete contribution.**

**Instructor(s):** Asst. Prof. Dr. Cemil YAVUZ

**Signature:**

**Date:**