ESOGU INDUSTRIAL DESIGN DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MECHANISM AND DETAIL ANALYSIS	141114002

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	2	1	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	4	1		

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	The aim of this course; • To give information about the mechanical and physical properties of materials. • To give information about basic structure concepts. • To give information about connecting parts, bearings, springs, gears, power supplies and motors used in product and mechanism design. • To enable students to analyze the workings of simple mechanisms used in product design. • To enable students to analyze the details of products produced with different materials and production methods.
Short Course Content	Mechanism and Detail Analysis course is designed in two parts. The first part consists of theoretical presentation and simple application assignments about basic structural concepts, simple machines, fittings, bearings, springs, gears, power supplies and motors. In the second part, students will analyze mechanisms and details by separating different industrial products into their components. The main purpose of this course is for students to analyze the theoretical content on mechanism and detail design through products and present the information they produced during the analysis process.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Have knowledge about the mechanical and physical properties of materials	2, 7	1, 2	D
2	Gains knowledge about basic structure concepts.	2, 7	1, 2	D
3	Understands the importance of structure in product design and can design products that structurally perform their function	2, 3, 4, 5, 9	6	D
4	Learns about simple and complex mechanisms	2, 7	1, 2	D
5	Can design new mechanisms based on existing mechanisms	2, 3, 4, 5, 9	6	D
6	Can analyze and present the details of products produced with different materials and production methods	6, 7	6	D
7	Based on the details of the existing products, they can decide on the appropriate details for their industrial design projects	2, 5, 9	6	D

*__Teaching Methods__ **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

__Measuring Methods__ **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	* Roberts, D. (2010). Making Things Move DIY Mechanisms for Inventors, Hobbyists, and Artists. McGraw-Hill.
Supporting References	* Engel, H. (2004). Strüktür Sistemleri. Tasarım Yayın Grubu. * Ertaş, D. G., & Bayazıt, N. (2009). Endüstri ürünleri tasarımında strüktür. Itüdergisi/a, 8(1), 90–102. * Günal Ertaş, D., & Bayazıt, N. (6-8 Ekim). Strüktür ve malzeme özelliklerinin endüstriyel ürün tasarımına etkisi. 2. Ulusal Yapı Malzemesi Kongresi, İstanbul. * Lesko, J. (2008). Industrial Design: Materials and manufacturing guide. New Jersey: John Wiley & Sons. * MEB. (2012). Mekanizma Yapımı. * MEB. (2014). Basit Mekanizmalar.
Necessary Course Material	Calipers, screwdriver sets and various hand tools for product analysis. Personal computer for use in presentations and assignments.

Course Schedule	
1	Introduction of the program
2	Basic concepts
3	Understanding the structure: the structure assignment
4	Understanding structure: Structure homework presentations
5	From simple machines to complex mechanisms
6	Fittings, bearings, springs, gears
7	Power supplies and motors
8	Mid-Term Exam
9	Product analysis: Disassembly and photographing
10	Product analysis: Detail drawing and presentations
11	Product analysis: Disassembly and photographing
12	Product analysis: Detail drawing and presentations
13	Product analysis: Disassembly and photographing
14	Product analysis: Detail drawing and presentations
15	Final assignment critiques
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Participation (in-class assignments)			
	1	6	6
Mid-Term Exam (homework submission)	1	20	20
Studying for Mid-Term Exam (homework)	1	1	1
Final Exam (homework submission)	1	40	40
Studying for Final Exam (homework)	1	80	80
		Total workload	**151**
		Total workload / 30	**5,03**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term (homework)	20
Participation	30
Final Exam (homework)	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Within cultural, historical and artistic contexts the ability to integrate theoretical knowledge about production and consumption mechanisms into the design practice	
2	The ability to plan the design process, to choose and use appropriate methods and techniques	4
3	The ability to identify design problems and related sub-problems and to produce creative solutions with a critical and dialectical approach	2
4	The ability to design in terms of spatial thinking using design principles and elements	3
5	The ability to make applications in the interaction of aesthetics and function using design elements and means and to evaluate these applications	3
6	The ability to visualize and present using two and three dimensional design tools	5
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	3
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	
9	The ability to carry out the design process effectively individually or in a team	3
10	The ability to take an active role in discipline-specific or interdisciplinary studies at the national and international levels;	

LECTUTER(S)				
Prepared by	Lect. Nimet Başar Kesdi			
Signature(s)				

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