

**SAKARYA UNIVERSITY**  
**MÜHENDİSLİK FAKÜLTESİ**  
**İnşaat Mühendisliği Bölümü**  
**COURSE DESCRIPTION AND PRACTICE**

Course Name	Code	Term	L+P Hour	Credits	ECTS
STATICS		2	4 + 0	4	4

Pre-requisite Courses	Math 1
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Language of the Course	Turkish
Course Type	Compulsory
Course Coordinator	Assist.Prof.Dr. MUSTAFA KUTANİS
Instructors	Assist.Prof.Dr. MUSTAFA KUTANİS
Assistants	-
Course Objective	To provide the theory of engineering mechanics of rigid body in detail along with its applications.
Learning Outcomes of the Course	1) Students can develop equilibrium equations for objects in equilibrium state, can calculate reactions forces for statically determinate systems, can calculate the centroids and moment of inertia of any cross section.
Content of the Course	Force Vectors, Equilibrium of particles, Cross products and moment, Equilibrium of rigid body, Trusses, Cables, Friction, Centroids and centers of mass, Moments of inertia

**WEEKLY SCHEDULE AND PRE-STUDY PAGES**

Week	Topics	Pre-study Pages
1	General concepts and introduction to vectors	[1] sayfa 3-17
2	Vector operations, addition of force vectors	[1] sayfa 17-56
3	Position vectors, dot product of vectors	[1] sayfa 56-66
4	Equilibrium of a particle	[1] sayfa 77-94
5	Cross product , Moment of a force about a specified axis, Moment of a couple, Resultants of a force and couple system	[1] sayfa 107-168
6	Conditions for rigid-body equilibrium, free-body diagrams	[1] sayfa 181-204
7	Simple trusses, the method of joints, Zero-force members, The method of sections	[1] sayfa 241-257
8	Cables	[1] sayfa 336
9	Friction, characteristics of dry friction	[1] sayfa 355-379
10	Center of gravity and centroids for a body and for composite bodies	[1] sayfa 411-433
11	Theorems of Pappus and Guldinus. Resultant of a general distributed force system	[1] sayfa 445-452
12	Definitions of Moments of inertia for Areas, Parallel-Axis theorem, Radius of Gyration	[1] sayfa 469-471
13	Moments of inertia for an area by integration, Moments of inertia for Composite Areas	[1] sayfa 472-480
14	Product of inertia for an area, moment of inertia for an area about inclined axes.	[1] sayfa 488-492

**SOURCES**

Course Book	[1] R.C. Hibbeler, ENGINEERING MECHANICS: STATICS
Other sources	[2] J.L. Meriam
	[3] Beer F. Johnston R.

<b>EVALUATION SYSTEM</b>		
IN-TERM STUDIES	QUANTITY	PERCENTAGE
Mid-terms	1	40
Quizzes	2<	20
Assignment	4<	20
Attendance	1	20
TOTAL		100
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
TOTAL		100

<b>Course Category</b>	
Mathmatics and Basic Sciences	% 45
Engineering	% 45
Engineering Design	% 10
Social Sciences	% 0

<b>CORRELATION BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM COMPETENCIES</b>						
No	Program Competencies	Percentage				
		1	2	3	4	5
1	Engineering graduates with sufficient theoretical and practical background for a successful profession and with application skills of fundamental scientific knowledge in the engineering practice					X
2	Engineering graduates with skills and professional background in describing, formulating, modeling and analyzing the engineering problem, with a consideration for appropriate analytical solutions in all necessary situations					X
3	Engineering graduates with the necessary technical, academic and practical knowledge and application confidence in the design and assessment of machines or mechanical systems or industrial processes with considerations of productivity, feasibility and environmental and social aspects.				X	
4	Engineering graduates with the practice of selecting and using appropriate technical and engineering tools in engineering problems, and ability of effective usage of information science technologies				X	
5	Ability of designing and conducting experiments, conduction data acquisition and analysis and making conclusions		X			
6	Ability of identifying the potential resources for information or knowledge regarding a given engineering issue				X	
7	The abilities and performance to participate multi-disciplinary groups together with the effective oral and official communication skills and personal confidence		X			
8	Ability for effective oral and official communication skills in Turkish Language and, at minimum, one foreign language					
9	Engineering graduates with motivation to life-long learning and having known significance of continuous education beyond undergraduate studies for science and technology			X		

10	Engineering graduates with well-structured responsibilities in profession and ethics	X				
11	Engineering graduates who are aware of the importance of safety and healthiness in the project management, workshop environment as well as related legal issues					
12	Consciousness for the results and effects of engineering solutions on the society and universe, awareness for the developmental considerations with contemporary problems of humanity			X		

<b>TABLE OF ECTS / WORKLOAD</b>			
Activities	QUANTITY	Duration (Hour)	Total Workload
Course Duration (Including the exam week: 16x Total course hours)	16	4	64
Hours for off-the-classroom study (Pre-study, practice)	16	1	16
Assignments	1	5	5
Mid-terms	1	15	15
Final examination	1	20	20
<b>Total Work Load</b>			120
<b>Total Work Load / 30</b>			4.00
<b>ECTS Credit of the Course</b>			4