IM 223 MECHANICS I (STATICS)		CIVIL ENGINEERING	
Semester	**Credit Structure**		
	Lecture	**Recitation**	**Laboratory**
3	3	0	0
Language	English		
Compulsory / Elective	Compulsory		
Prerequisites	None		
Catalog Description	Vectors, force, moment, statics of particles. Equivalent systems of forces, planar systems of forces. Statics of rigid bodies. Frames and trusses. Centroids of lines and areas, distributed forces. Internal forces in frames and beams and internal force diagrams. Moments of inertia of areas and masses, Mohr's circles of inertia.		
Course Objectives	Teaching the fundamentals of engineering mechanics.		
Course Outcomes	Applicability of basic knowledge in mechanics to the solution of equilibrium problems concerning rigid bodies and various types of structures.		
Textbook and /or References	Vector Mechanics For Engineers, Statics, F. P. Beer and E. R. Johnston, Mc Graw Hill, 6th Edition.		

Assessment Criteria		**Quantity**	**Percentage**
	Midterm Exams	2	50
	Quizzes	-	-
	Homeworks	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	1	50

Course Category by Content (%)		
	Mathematics and Basic Sciences	40
	Engineering Science	50
	Engineering Design	10
	Social Sciences	0

Instructors	**Prof. Dr. Tekin Gültop, Doç. Dr. Kurtuluş Soyluk**

COURSE PLAN	
Week	**Topics**
1	INTRODUCTION: The applications of Newtonian Mechanics in engineering, the study of equilibrium, dimensions and units.
2	STATICS OF PARTICLES: The resultant of vectors, decomposition of vectors into its components, concurrent and coplanar forces. Rectangular components of forces.
3	EQUILIBRIUM: Newton's laws, equilibrium of a particle, free body diagrams, forces in space.
4	RIGID BODIES: Internal and external forces, vector product, moment, Varignon's theorem, scalar product, mixed triple product, equivalent systems of forces.
5	EQUILIBRIUM OF RIGID BODIES: Planar problems, free body diagrams, types of supports, unstable, statically determinate and indeterminate systems, two and three force bodies, space problems.
6	1st MIDTERM EXAMINATION
7	DISTRIBUTED FORCES: Determination of centroids, curves and areas, composite areas and bodies, distributed forces, hydrostatic pressure, centroids of volumes.
8	EQUILIBRIUM OF STRUCTURES: Unstable, statically determinate and indeterminate frames, free body diagrams, reaction forces.
9	TRUSSES: Types of trusses, statically determinate and indeterminate trusses, free body diagrams, methods of joints and sections.
10	2nd MIDTERM EXAMINATION
11	INTERNAL FORCES: Sectioning of frames, definition and determination of internal forces.
12	BEAMS: Types of beams, Gerber beams, definition and determination of internal forces.
13	INTERNAL FORCE DIAGRAMS: Shearing force, bending moment and axial force diagrams.
14	MOMENTS OF INERTIA: Area and mass moments of inertia, parallel axis theorem, circle of inertia.

RELATIONSHIP BETWEEN THE COURSE AND DEPARTMENT CURRICULUM

	Program Outcomes	**1**	**2**	**3**
1	An ability to apply knowledge of mathematics, science, and engineering			X
2	An ability to design and conduct experiments, as well as to analyze and interpret data	X		
3	An ability to design a system, component, or process to meet desired needs		X	
4	An ability to function on multi-disciplinary teams	X		
5	An ability to identify, formulate, and solve engineering problems			X
6	An understanding of professional and ethical responsibility			X
7	An ability for effective written and oral communication in Turkish and English		X	
8	The broad education necessary to understand the impact of engineering solutions in a global and societal context	X		
9	A recognition of the need for, and ability to engage in life-long learning		X	
10	A knowledge of contemporary issues	X		
11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	X		

Contribution of the course : 1:None 2:Partially 3:Completely