MIDDLE EAST TECHNICAL UNIVERSITY NORTHERN CYPRUS CAMPUS

MECH205 STATICS

Syllabus for MECH-205 (3-0)3 Statics
2023-2024 Academic Year Spring Semester

Instructor:
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Course Schedule:

Course Code: 3650205
METU Credit (Theoretical-Laboratory hours/week): 3(3-0)
ECTS Credit: 5.0
Department: Mechanical Engineering
Language of Instruction: English
Level of Study: Undergraduate
Course Coordinator: Assoc. Prof. Dr. Murat Sönmez
Regular Semester: Fall Semesters.
Prerequisite: Set 1: 3570119 , 3580105
The course set above should be completed before taking MECH205 STATICS .

Course Objectives

To identify force and couple systems acting on particles or rigid bodies by drawing free body diagrams

To analyze static equilibrium of particles and rigid bodies.

To analyze internal forces in structures and beams.

To identify and analyze the effects of dry friction on rigid bodies in static equilibrium.

To compute the geometric and mass properties of surfaces and solids

Course Content

Idealizations and principles of mechanics. Important vector quantities, classification and equivalence of force systems. State of equilibrium. Elements of structures; trusses, beams, cables and chains. Friction. Elements of statics of fluids. Variational methods.

Course Learning Outcomes

Having successfully completed this course, the student will be able to:

Use vectors and vector operations to analyze systems of forces and moments in two and three-dimensions.

Draw free body diagrams of particles and rigid bodies in a plane and in space.

Apply the equations of equilibrium to analyze the equilibrium of a particle and a rigid body.

Analyze forces acting on the members of trusses, frames and machines in static equilibrium.

Analyze internal forces of a beam using shear force and bending moment diagrams.

Identify dry friction and analyze the equilibrium of rigid bodies subjected to friction force.

Apply first and second moment equations to calculate the center of gravity, center of mass, centroid, mass and area moments of inertia of single and composite bodies.

Program Outcomes Matrix

Undergraduate

		Level of Contribution			
	Program Outcomes	**0**	**1**	**2**	**3**
1	Ability to establish the relationship between mathematics, basic sciences and engineering sciences with engineering applications				X
2	Ability to find and interpret information		X		
3	Ability to follow the literature and technology related to his/her topic of interest	X			
4	Recognition of the need to keep oneself up to date in his/her profession		X		
5	Possession of written and oral communication skills		X		
6	Ability to conduct team work (within the discipline, inter-disciplinary, multi-disciplinary)	X			
7	Ability to produce original solutions		X		
8	Use of scientific methodology in approaching and producing solutions to engineering problems and needs				X

	Program Outcomes	Level of Contribution			
		0	1	2	3
9	Openness to all that is new		X		
10	Ability to conduct experiments	X			
11	Ability to do engineering design	X			
12	Awareness of engineering ethics, knowledge and adoption of its fundamental elements		X		
13	Ability to take societal, environmental and economic considerations into account in professional activities	X			
14	Possession of pioneering and leadership characteristics in areas related to the profession	X			

0: No Contribution **1:** Little Contribution **2:** Partial Contribution **3:** Full Contribution

Reference Books:

Engineering Mechanics-STATICS, Author: Russell C. Hibbeler, Prentice Hall

Vector Mechanics for Engineers- STATICS, Authers: Ferdinand P. Beer, E. Russell Johnston Jr., McGraw-Hill

Grading:

Mid-Term Exam : 30%

Quizzes& Pop Quizzes' : 30%

Final : 40%