

Course Description						
Name		Code	Semester	T+A Hour	Credit	ECTS
DYNAMICS		CEE2168280	Fall Semester	3+0	3	5
Prerequisites Courses		MATEMATİK I; FİZİK I; FİZİK I LAB				
Recommended Elective Courses						
Language of Instruction		English				
Course Level		First Cycle (Bachelor's Degree)				
Course Type		Required				
Course Coordinator		Prof.Dr. Mehmet Hakkı OMURTAG				
Name of Lecturer(s)		Prof.Dr. Mehmet Hakkı OMURTAG, Lect. Mert ÖZTÜRK				
Assistant(s)		Mert ÖZTÜRK				
Aim		To teach the basic principles of kinematics and kinetics of a particle and a rigid body.				
Course Content		This course contains; Introduction and Principles of Dynamics,Kinematics of a Particle: Rectilinear Motion,Kinematics of a Particle: Curvilinear Motion,Relative Motion,Dependent Motion,Kinetics of a Particle, Newton's Laws of Motion,Work and energy,Impulse and momentum,Angular Impulse and Momentum,Kinetics of Systems of Particles,Planar Kinematics of a Rigid Body,Instantaneous Center,Planar Kinetics of a Rigid Body,Space Kinematics of a Rigid Body.				
Course Learning Outcomes				Teaching Methods	Assessment Methods	
1. Position, velocity and acceleration are calculated using the equations of kinetics and kinematics of particles and rigid bodies.				12, 14, 16, 6, 8, 9	A, E, G	
2. Calculates the forces/moments that cause motion by applying the equations of motion on the free body and kinetic diagrams of a rigid body.				12, 14, 16, 6, 8, 9	A, E, G	
3. Solves the dynamic problems using vectorial and/or scalar equations of kinetics and kinematics.				12, 14, 16, 6, 8, 9	A, E, G	
4. Solves the dynamics of particles and rigid bodies using energy or impulse momentum principles.				12, 14, 16, 6, 8, 9	A, E, G	
Teaching Methods		12: Problem Solving Method, 14: Self Study Method, 16: Question - Answer Technique, 6: Experiential Learning, 8: Flipped Classroom Learning, 9: Lecture Method				
Assessment Methods		A: Traditional Written Exam, E: Homework, G: Quiz				
Lecture Schedule						
Sequenc e	Topics		Preliminary Preparation			
1	Introduction and Principles of Dynamics					
2	Kinematics of a Particle: Rectilinear Motion					
3	Kinematics of a Particle: Curvilinear Motion					
4	Relative Motion					
5	Dependent Motion					
6	Kinetics of a Particle, Newton's Laws of Motion					
7	Work and energy					
8	Impulse and momentum					
9	Angular Impulse and Momentum					
10	Kinetics of Systems of Particles					
11	Planar Kinematics of a Rigid Body					
12	Instantaneous Center					
13	Planar Kinetics of a Rigid Body					
14	Space Kinematics of a Rigid Body					
Evaluation Methods			Weight(%)			
Midterm Exam			30			
General Exam			70			

Resources
Hibbeler, R. C., "Engineering Mechanics: Dynamics in SI Units", 14th Edition (2017), Pearson. ISBN: 9781292088723
Omurtag, M. H., "Dinamik Mühendislik Mekaniği", 3rd Edition (2015), Birsen Yayınevi. ISBN: 9789755115566