



**HASAN KALYONCU UNIVERSITY**  
**Faculty of Engineering**  
**Course Description Form**

<b>COURSE:</b> Dynamics					
<b>CODE:</b> CE221		<b>SEMESTER:</b> FALL			
<b>LANGUAGE:</b> ENGLISH		<b>TYPE:</b> COMPULSORY			
<b>PRE-REQUISITES:</b> - <b>CO-REQUISITES:</b> -		<b>THEORY</b>	<b>PRACTICAL</b>	<b>CREDIT</b>	<b>ECTS</b>
<b>WEEKLY HOURS:</b> 3		3	0	3	4

**CONTENT OF THE COURSE:**

This course covers the motion of moving solids, and the relation between speed, momentum and force. Topics include particle dynamics, linear and curvilinear motion, combination of motions, Newton's laws, Impulse, momentum and angular momentum, solid dynamics, kinematics, Euler's laws, and work and energy calculations.

**OBJECTIVE OF THE COURSE:**

To enable students to develop their analytical skills by understanding the basic concepts of dynamics of particles and rigid bodies, in addition to different types of motions and its governing equations.

**WEEKLY SCHEDULE AND PRE-STUDY PAGES**

<b>Week</b>	<b>Topics</b>
1	kinematics of a particle
2	kinematics of a particle
3	kinetics of a particle: force and acceleration
4	kinetics of a particle: force and acceleration
5	kinetics of a particle: work and energy
6	kinetics of a particle: work and energy
7	kinetics of a particle: impulse and momentum
8	Midterm exam
9	planar kinematics of a rigid body
10	planar kinematics of a rigid body: force and acceleration
11	planar kinetics of a rigid body: force and acceleration
12	planar kinetics of a rigid body: work and energy
13	planar kinetics of a rigid body: work and energy
14	planar kinetics of a rigid body: impulse and momentum

**TEXTBOOK:** "Engineering Mechanics / DYNAMICS" By R. C. Hibbeler – Pearson Prentice Hall, Upper Saddle River, New Jersey 07458, 13th Edition, 2013.

<b>EVALUATION SYSTEM:</b>		
<b>IN-TERM STUDIES</b>	<b>QUANTITY</b>	<b>PERCENTAGE (%)</b>
Midterm Exam	1	40
Homework		
Laboratory works		
Quiz		
Final Exam	1	60
<b>TOTAL</b>		100
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE		40
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		60
<b>TOTAL</b>		100

<b>COURSE CATEGORY:</b>	<b>PERCENTAGE (%)</b>
Mathematics and Basic Sciences	60
Engineering	40
Engineering Design	
Social Sciences	

<b>TABLE OF ECTS / WORKLOAD:</b>			
<b>Activities</b>	<b>QUANTITY</b>	<b>Duration (Hour)</b>	<b>Total Workload</b>
Course Duration	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Laboratory works	0	0	0
Mid-term	1	2	2
Final examination	1	2	2
Homework	0	0	0
Quiz			
<b>Total Work Load</b>			113
<b>Total Work Load / 30</b>			3,8
<b>ECTS Credit of the Course</b>			4

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
<b>LO1</b>	3	2	0	0	0	1	0	0	0	0	0
<b>LO2</b>	3	2	0	0	0	1	0	0	0	0	0
<b>LO3</b>	3	2	0	0	0	1	0	0	0	0	0
<b>LO4</b>	3	2	0	0	0	1	0	0	0	0	0
<b>LO5</b>	3	2	0	0	0	1	0	0	0	0	0
	PO: Program Outcomes   LO: Learning Outcomes Values: 0: None   1: Low   2: Medium   3: High										

<b>INSTRUCTOR(S):</b>	Asst.Prof.Dr. D1a Eddin NASSANI
<b>FORM PREPARATION DATE:</b>	22.05.2019

<b>LEARNING OUTCOMES OF THE COURSE:</b>	<b>PROGRAM OUTCOMES:</b>
<p><b>LO1:</b> Study particle and rigid-body motion along straight and angular path</p> <p><b>LO2:</b> Analyze the accelerated motion of a particle using the equation of motion</p> <p><b>LO3:</b> Compute the principles of work-energy and impulse-momentum of particle and rigid-body</p> <p><b>LO4:</b> Compute the planar kinetic equations of motion for rigid body using principle of force and acceleration</p> <p><b>LO5:</b> Study the analysis of undamped forced vibration and viscous damped forced vibration</p>	<p><b>PO1:</b> Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.</p> <p><b>PO2:</b> Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.</p> <p><b>PO3:</b> Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.</p> <p><b>PO4:</b> Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively.</p> <p><b>PO5:</b> Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.</p> <p><b>PO6:</b> Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.</p> <p><b>PO7:</b> Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.</p> <p><b>PO8:</b> Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.</p> <p><b>PO9:</b> Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.</p> <p><b>PO10:</b> Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.</p> <p><b>PO11:</b> Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.</p>