Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Mechanical Engineering Department

SYLLABUS

Code/Name	MCE 203 / Dynamics
Type	Required
Credit/ECTS	3/6
Hour per Week	3 (3+0+0)
Level/Year	Undergraduate/2
Semester	Fall
Classroom	A203
Content	Kinematics of particles, systems of particles, and rigid bodies. Moving reference frames. Kinetics of particles, systems of particles, and rigid bodies. Equilibrium, energy, linear momentum, and angular momentum.
Prerequisites	MEC 102 Statics
Textbooks	***Primary*** RC Hibbeler, Engineering Mechanics Dynamics, Pearson, 14th Edition, 2017. ***Supplementary*** FP Beer, ER Johnston Jr, P Cornwell, Vector Mechanics for Engineers: Dynamics, McGraw Hill, 9th Edition, 2009. JL Meriam, LG Kraige, JN Bolton, Engineering Mechanics: Dynamics, Wiley, 8th Edition, 2015.
Objectives	• To analyze kinematics and kinetics of particles • To solve particle dynamics problems using work and energy methods • To analyze planar kinematics and kinetics of a rigid body
Course Outcomes	In this course you will be able to: CO1 Calculate rectilinear motion and curvilinear motion of particles CO2 Apply Newton's second law of motion to a system of particles CO3 Apply conservation of energy principle to dynamic systems CO4 Apply conservation of linear momentum to a system of particles CO5 Calculate planar rigid body motion C06 Formulate planar kinetic equations of motion

Weekly Schedule of Topics

W	Topic
1	Kinematics of Particles | Rectilinear Motion, Motion of Several Particles
2	Kinematics of Particles | Curvilinear Motion, Motion Relative to a Frame
3	Kinetics of Particles | The Equation of Motion
4	Kinetics of Particles | Angular Momentum of a Particle
5	Energy and Momentum Methods | Conservation of Energy
6	Impulse and Momentum | Conservation of Linear Momentum
7	System of Particles
8	Kinematics of a Rigid Body | Translation, Rotation About a Fixed Axis
9	Kinematics of a Rigid Body | General Plane Motion
10	Kinematics of a Rigid Body | Motion About a Fixed Point
11	Kinetics of a Rigid Body | Mass Moment of Inertia

12	Kinetics of a Rigid Body | Equation of Motion
13	Kinetics of a Rigid Body | Constrained Plane Motion
14	Kinetics of a Rigid Body | Principle of Work and Energy

Professional Contribution	Ability to write kinetic equations of motion in two dimensions

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	5	3	0	3	0	3	0	1	0	3	0
CO2	5	3	2	3	0	3	0	1	0	3	0
CO3	5	3	1	3	0	3	1	2	2	2	1
CO4	5	2	1	2	0	2	0	1	0	0	0
CO5	5	4	4	4	0	5	2	3	2	3	1
CO6	5	4	4	4	0	5	2	3	2	3	1

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	The consequence of violation of the attendance rule is to receive a grade of **DZ.**
Requirements	Basic knowledge of Matlab
Course Policy	1. You must attend at least 70% of the sessions, including add-drop period. 2. Be in the class on time. 3. English should always be used to communicate with one another. 4. Mobile phone should be switched off and put away during the class. 5. You cannot talk to your friends during class no matter what the subject is.
Cheating & Plagiarism	• Copying or letting someone copy your work on exams, assignments, or reports is cheating. • Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism. • The consequence of academic dishonesty is to receive a grade of **FF** for the course.
Evaluation	Midterm Exam 40% Final Exam 60% Total 100%
Rubric	A rubric will be announced after the exams based on the details of the answer keys.

Instructor

Name/Surname	Akın Oktav	Email	akin.oktav@alanya.edu.tr
Room	110	Office Hours	

Prepared by Akın Oktav