TED UNIVERSITY

CE 212
Engineering Mechanics II

SYLLABUS/SPRING 2020

Course Information

Required or Elective	☑Required ☐Elective	**Date Prepared**	February 2020
Semester	Spring 2020	**Class Hours and Classrooms**	Mon. 14:00 – 15:50 (G213) Tue. 14:00 – 14:50 (G213) Lectures will be held on regular time through Zoom platform.
Course Credit Hours/ ECTS credits	(3+0+0) 3 / 5	**Pre-requisite/ Co-requisite**	CE211
Level of Course	Sophomore	**Language of Instruction**	☑ English ☐ Turkish
Instructors and their office hours	Dr. Rıza Secer Orkun Keskin (secer.keskin@tedu.edu.tr) Please contact through e-mail.		
Teaching Assistant(s)	Ertürk Tuncer; Please contact through e-mail.		
Textbook	Engineering Mechanics: Dynamics by R.C. Hibbeler, 14th Edition, Prentice Hall, 2015.		
Recomended Readings	1) Vector Mechanics for Engineers: Dynamics by F. Beer, E.R. Johnston, P. Cornwell, 10th Edition, McGraw-Hill, 2012. 2) Engineering Mechanics 3: Dynamics by D. Gross, W. Hauger, J. Schroder, W.A. Wall, J. Bonet, 2nd Edition, Springer, 2014. 3) Engineering Mechanics: Dynamics by J.L. Meriam, L.G. Kraige, 7th Edition, Wiley, 2013. 4) Engineering Mechanics: Dynamics by M. Plesha, G. Gray, F. Costanzo, 2nd Edition, McGraw-Hill, 2012.		
Course Web Pages	We have already added all of you to the course web page on Moodle http://moodle.tedu.edu.tr. Please follow this course web page regularly to have access to the posted course materials and announcements.		

Course Description

Kinematics of particles and rigid bodies: absolute motion, relative motion. Kinetics of particles: equations of motion, work-energy and impulse-momentum. Systems of particles. Kinetics of rigid bodies: Euler's equation, plane motion of rigid bodies, kinetic energy of rigid bodies. Introduction to the dynamics of vibrating systems.

Course Objective

This is an introductory level course on motion of rigid bodies and forces that cause motion. In this course, Newton's Laws, energy and momentum principles will be explored and dynamic behavior of undamped single degree of freedom systems will be covered.

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. model 2D motion of system of particles and rigid bodies by employing kinematic relationships, **(B3)**
2. apply Newton's equations to 2D dynamic problems to determine forces resulting from specified motions of system of particles and rigid bodies, **(B3)**
3. explain the difference between static and kinetic friction, **(B2)**
4. model 2D motion of particles and rigid bodies using energy and momentum principles, **(B3)**
5. recognize the difference between free and forced type vibrations, **(B1)**
6. recognize the difference between damped and undamped single degree of freedom systems, **(B1)**
7. apply Newton's equations of motion and energy methods to 2D dynamic problems to describe vibrations of single degree of freedom rigid bodies. **(B3)**

Course Assignments

A. ***Homework (15%):*** A number of problem sets will be assigned throughout the semester. Depending on the performance of the class pop-up quizzes may be given.
B. ***Quizzes (25%):*** A number of in-class quizzes will be given.
C. ***Overnight Assignments (60%):*** Three assignments will be given. The deadline for submission will be decided according to the problems in the assignment.

Course Assessments & Learning Outcomes Matrix

Assessment Methods	Course Learning Outcomes
Homework	#1, #2, #3, #4
Quizzes	#1, #2, #3, #4
Overnight Assignments	All

Relationship to Program Outcomes

This course contributes to fulfillment of the following program outcomes:

ii. Apply knowledge of mathematics, science, and engineering to design and implement original, innovative and sustainable civil engineering systems or processes to meet desired needs within a greater societal context

vi. Identify, formulate, and solve engineering problems

Tentative Course Lectures Outline

A tentative course outline for the lectures is given below. Any changes and updates will be announced on the Moodle web page for the course.

Week	Topics
1	Kinematics of a Particle: Rectilinear Motion, Curvilinear Motion
2	Kinematics of a Particle: Curvilinear Motion, Dependent Motion, Relative Motion
3	Kinetics of a Particle: Force and Acceleration
4	Kinetics of a Particle: Work, Power and Efficiency
5	Kinetics of a Particle: Conservation of Energy
6	Kinetics of a Particle: Principle of Impulse and Momentum, Conservation of Impulse and Momentum
7	Kinetics of a Particle: Impulse and Momentum, Impact
8	Planar Kinematics of a Rigid Body: Translation, Rotation about a Fixed Axis, Relative Motion Analysis of General Plane Motion: Velocity
9	Planar Kinematics of a Rigid Body: Relative Motion Analysis of General Plane Motion- Velocity, Acceleration
10	Planar Kinetics of a Rigid Body: Translation, Rotation about a Fixed Axis
11	Planar Kinetics of a Rigid Body: General Plane Motion
12	Planar Kinetics of a Rigid Body: Work and Energy
13	Vibration
14	Vibration

Course Policies and Some Remarks

Attendance

My observations show that a student with a high attendance rate is likely to get a good grade. On the contrary, failure rate rapidly increases among those students who attend less than 70 percent of all lectures. In order to get a good grade, it is strongly advised not to miss any course.

Calculator Policy

You may use a calculator during exams.

Plagiarism

Collaboration on non-collected homework and in studying is strongly encouraged; however, the work you hand in must be solely your own. Sharing written work before it is turned in to be graded is academic dishonesty. For more information on TEDU policy on intellectual integrity see the TEDU student handbook.

Disability Support

If you have a disabling condition which may interfere with your ability to successfully complete this module, please contact Student Activities Specialist at Dean of Students Office Mr Peyman Jaferi, (email: peyman.jaferi@tedu.edu.tr, phone: (312) 585-0132) or Assist. Prof. Dr. Onur Özmen (email: onur.ozmen@tedu.edu.tr, phone: (312) 585-0206). For more information please see Handbook for Registered Students.

Make Up Exams

Make-up exams for midterm exams will NOT be offered. The only exceptions are illness or emergency (e.g., death in family, a traffic accident, etc.). In case of an illness or emergency you need to supply a documentation that supports your claim.

Also please read the document given in the link http://www.tedu.edu.tr/tr/main/yonetmelikler-ve-yonergeler

Late Homework

For each day after the announced deadline, 25% of the total earned mark will be deducted.