TED UNIVERSITY

CE 211
Engineering Mechanics I

SYLLABUS/Spring 2021

Course Information

Required or Elective	☑Required ☐Elective	**Date Prepared**	February 2021
Semester	Spring 2021	**Class Hours and Classrooms**	Mon. 15:00 – 15:50 Wed. 13:00 – 14:50 Lectures will be held on regular time through Zoom platform.
Course Credit Hours/ ECTS credits	(3+0+0) 3 / 5	**Pre-requisite/ Co-requisite**	PHYS105
Level of Course	Sophomore	**Language of Instruction**	☑ English ☐ Turkish
Instructors and their office hours	Assoc. Prof. Dr. Rıza Secer Orkun Keskin, E-mail: secer.keskin@tedu.edu.tr; Room: D313 Office Hour: Thu 13:00-14:00 (via Zoom) Please get an appointment by e-mail to visit me in the office.		
Teaching Assistant(s)	Büşra Yıldırım e-mail: busra.yildirim@tedu.edu.tr		
Textbook	Engineering Mechanics: Statics by R.C. Hibbeler, 14th Edition, Prentice Hall, 2015.		
Recommended Readings	1) Vector Mechanics for Engineers: Statics by F. Beer, E.R. Johnston, D. Mazurek, 10th Edition, McGraw-Hill, 2012. 2) Engineering Mechanics: Statics by D. Gross, W. Hauger, J. Schroder, 2nd Edition, Springer, 2013. 3) Engineering Mechanics: Statics by J.L. Meriam, L.G. Kraige, 7th Edition, Wiley, 2011.		
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

Introduction to rigid body mechanics. Equivalent force systems: Concepts of moment, couple, resultant. Equilibrium: Free-body diagram; equations of equilibrium. Structural analysis: Trusses; beams. Shear force and bending moment diagrams by method of sections and by method of integration. Properties of surfaces: Area moment and centroid; moments and product of inertia; principal directions.

Course Objective

Mechanics is the physical science that deals with the effects of forces on objects. Mechanics can be divided into three main branches: rigid-body mechanics, deformable-body mechanics, and fluid mechanics. This course is an introductory level course on rigid-body mechanics. The objective of this course is to introduce students to the fundamental concepts and principles employed by engineers - whether civil, mechanical, aeronautical, etc. - in the design of structures of all sorts, sizes and purpose.

Course Learning Outcomes

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

1. apply vector algebra to engineering mechanics problems, **(B3)**
2. prepare free body diagrams of 2D and 3D rigid bodies, **(B3)**
3. apply Newton's 1st law of motion to 2D and 3D rigid bodies, **(B3)**
4. explain the difference between truss and frame type structures, **(B2)**
5. distinguish statically determinate truss and frame type structures, **(B2)**
6. compute internal forces and support reactions in 2D and 3D statically determinate trusses, **(B3)**
7. compute internal forces and support reactions in statically determinate beams and frames, **(B3)**
8. determine properties of surfaces such as center of gravity, centroid of an area; moment of inertia, product and polar moment of inertia of an area, **(B3)**
9. compute single force equivalents of distributed 2D and 3D force systems. **(B3)**

Course Assignments

A. ***Homework Assignments (10%):*** A number of problem sets will be assigned.
B. ***Quizzes (20%):*** A number of quizzes will be given.
C. ***Short-time assignments (20%):*** Two short-time assignments will be given.
D. ***Midterm exam (20%):*** A face-to-face (or online) mid-term exam will be given.
E. ***Final Exam (30%):*** A cumulative face-to-face (or online) final exam will be given.

Course Assessments & Learning Outcomes Matrix

Assessment Methods	Course Learning Outcomes
Homework	All
Quizzes	All
Short-time assignments	All
Final Exam	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 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	General Principles (Sections from textbook 1.1-1.6)
2	Force Vectors (2.1-2.9)
3	Force System Resultants (4.1-4.9)
4	Force System Resultants (4.1-4.9)
5	Equilibrium of a Particle (3.1-3.4)
6	Equilibrium of a Rigid Body (5.1-5.7)
7	Structural Analysis (6.1-6.6)
8	Structural Analysis (6.1-6.6)
9	Structural Analysis (6.1-6.6)
10	Internal Forces (7.1-7.3)
11	Internal Forces (7.1-7.3)
12	Internal Forces (7.1-7.3)
13	Center of Gravity and Centroid (9.1-9.3, 9.5)
14	Moment of Inertia (10.1-10.5)

Course Policies and Some Remarks

Attendance

In order to be admitted to the final examination, a student must submit at least 80% of the given assignments, attend at least 80% of the quizzes and take the mid-term exam. Students not fulfilling these conditions will not be permitted to take the final examination. Students not given the permission to take the final examination will automatically receive the grade FX at the end of the semester.

Calculator Policy

You may use a calculator during exams.

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.

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 (https://student.tedu.edu.tr/en/student/principles-of-academic-integrity).

Specialized Support and Students with Disabilities

Students who may require specialized support due to a disability affecting mobility, vision, hearing, learning, mental or physical health should consult with Specialized Support and Disability Coordinator, Asst. Prof. Emrah Keser E-mail: emrah.keser@tedu.edu.tr, or visit the website at https://www.tedu.edu.tr/tr/main/engelsiz-tedu

Student Counseling Centre

The Student Counseling Centre is a service mandated with providing crisis intervention and supportive listening services to the campus community. A major part of fulfilling that mandate is raising awareness of our service so that students know they are never alone in dealing with problems. For further information and/or questions, you can contact Sıla Deniz Beyarslan, sdeniz.beyarslan@tedu.edu.tr, Office 165, or visit SCC website at http://csc.tedu.edu.tr

TEDU COPeS

TED University Coronavirus Psychosocial Support Team was established in order to facilitate coping with the psychological, social, familial, academic, and professional difficulties that may arise due to adverse conditions associated with COVID-19 pandemic for TEDU students and employees. TEDU COPeS aims to provide psychosocial support for TED University students and employees during the coronavirus outbreak. To this end, the team aims to provide support at the early stages of a possible crisis, activate and strengthen your coping strategies, and provide information on support resources. For further information and/or questions, visit their website at https://copes.tedu.edu.tr