

MECH 2340: MECHANICS II - Dynamics

Class Reference Number: 12317
 Class Meeting: 10:30 AM - 11:50 AM TR / Classroom Building C305
 Prerequisite Courses: MECH 1321: Statics
 Instructor: Angel Flores-Abad, PhD
 Department of Aerospace and Mechanical Engineering
 Office: A109
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 Office hours: 3:30 – 4:30 PM TRs or by appointment
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COURSE DESCRIPTION

This course introduces Newtonian mechanics, both kinematic (study of motion) and kinetic (study of force and its effects on motion) of particles and bodies, work and energy, and impulse and momentum.

COURSE OBJECTIVES

- Students will learn to obtain mathematical expressions that represent the motion of different systems using physical laws.
- Students will use computer-based tools to validate and analyze the dynamic behavior of mechanical systems.

TOPICS COVERED

- Kinematics of a particle
- Kinetics of a particle: force and acceleration
- Kinetics of a particle: work and energy
- Kinetics of a particle: impulse and momentum
- Planar kinematics of a rigid body
- Planar kinetics of a rigid body: force and acceleration
- Planar kinetics of a rigid body: work and energy
- Planar kinetics of a rigid body: impulse and momentum

GRADING

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| • Homework, quizzes, online activities, in-class assignments, etc. | 35% |
| • Midterm 1 (September 25) | 15% |
| • Midterm 2 (October 30) | 15% |
| • Midterm 3 (December 2) | 15% |
| • Final Exam - Comprehensive (December 11 @ 10 AM-12:45 PM) | 20% |

Students with a minimum average of 90/100 in the three midterm exams will be exempt from taking the final exam and will get full credit on it, i.e., 20%.

Optional: students with a minimum average of 85/100 but less than 90/100 will obtain his average midterm exams grade on the final exam.

Scale A \geq 90%, B \geq 80% but <90%, C \geq 70% but <80%, D \geq 60% but <70% and F <60%

Policies

- Make-up exams are available only due to UTEP accepted reasons. See UTEP's catalog. If you miss an exam due to a UTEP-approved reason, the next exam will count as two scores.
- Correction period: students will have one week after the assignments, quizzes, exams, etc., are returned with grades to ask for any revision; after that week, there will not be changes to the grades.

TEXTBOOKS

[1] Engineering Mechanics: Dynamics (14+ Edition) by Russell C. Hibbeler. Published by Pearson Prentice Hall

[2] Vector Mechanics for Engineers: Dynamics (12th Edition) by Ferdinand Beer, Jr., E. Russell Johnston and Phillip Cornwell. Published by McGraw-Hill.

SOFTWARE

Matlab. <https://www.mathworks.com/academia/tah-portal/university-of-texas-at-el-paso-40735445.html#get>.

Matlba toolboxes: Symbolic, Simscape, Multibody.

Refer to ETC for a specific question. Engineering building E226 (915) 747-5223.

MATERIAL FOR CLASS**Mandatory equipment:**

- Laptop. Make sure you bring your computer to all the lectures.

ATTENDANCE AND TARDINESS

Attendance is mandatory. Absences can be checked by the instructor through quizzes, exams, roll call, randomly picked names for problem-solving in class, or other mechanisms. You could receive an F grade if you miss more than three classes without the instructor's consent. The instructor appreciates all efforts to attend the class. Exams and quizzes are given at the beginning of the classes. No additional time will be allowed for late attendees.

ACADEMIC HONESTY

Read the Addendum to Syllabi file available in Blackboard.

DISCLAIMER

The above schedule, policies, and assignments in this course are subject to change in the event of contingency or by mutual agreement between the instructor and the students.