

**MECH 2340: MECHANICS II - Dynamics**

Class Reference Number: 23518  
 Class Meeting: 10:30 AM - 11:50 AM TR / Classroom Building C305  
 Prerequisite Courses: MECH 1321: Statics  
 Instructor: Angel Flores-Abad, PhD  
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 Office hours: 3:30 PM – 4:30 PM TRs

**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. | 30% |
| • Midterm 1 (February 14)  | 15% |
| • Midterm 2 (March 9)  | 15% |
| • Midterm 3 (April 27)   | 15% |
| • Final Exam - Comprehensive (December 8)                          | 15% |
| • Final Project  | 10% |

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., 15%.

**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 (14th 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 E351D (915) 747-5131.

**MATERIAL FOR CLASS****Mandatory equipment:**

- Laptop. Make sure you bring your computer to all the lectures.
- Basic scientific calculator (Non-programmable). For reference: <https://ncees.org/exams/calculator/>.

Casio: All fx-115 and fx-991 models (Any Casio calculator must have "fx-115" or "fx-991" in its model name.) Hewlett Packard: The HP 33s and HP 35s models, but no others Texas Instruments: All TI-30X and TI-36X models (Any Texas Instruments calculator must have "TI-30X" or "TI-36X" in its model name.). These are the same calculators that are currently being allowed in the Fundamental of Engineering (FE) and Professional Engineering (PE) exams

**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.