



Class Reference Number (CRN): 10977

Instructor: Mohiuddin Ahmad, Ph.D.

Office: TBD

Office Hours: 11:00 to 12:30 pm MW, and welcome any time I am available in my office.

Email: mahmad@utep.edu

Class Meeting Schedule: 3:00 - 4:20 pm MW.

Class Location: Undergraduate Learning Center 342.

Prerequisites: Mechanics I - Statics.

Text Book: Mechanics Dynamics by R. C. Hibbeler, 14th edition.

Course Objective:

At the end of this class, the typical students should be well prepared in the following areas:

- Determine the kinematic quantities (position, displacement, velocity, and acceleration) of a particle traveling along straight and curved paths.
- Apply the equation of motion using the rectangular coordinates, or the normal and tangential coordinates.
- Apply the principle of work and energy to a particle or system of particles.
- Calculate the linear momentum of a particle and the linear impulse of a force.
- Determine the mass moment of inertia of a rigid body or a system of rigid bodies.
- Apply the three equations of motion for a rigid body in planar motion.
- Analyze the planar kinetics of a rigid body undergoing rotational motion.
- Analyze the planar kinetics of a rigid body undergoing general plane motion.
- Define the various ways a force and couple do work.
- Apply the principle of work and energy to a rigid body.
- Determine the potential energy of conservative forces.
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Topics covered

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| 1. Kinematics of a Particle | (Chapter 12) |
| 2. Kinematics of a Particle: Force and Acceleration | (Chapter 13) |
| 3. Kinematics of a Particle: Work and Energy | (Chapter 14) |
| 4. Kinematics of a Particle: Impulse and Momentum | (Chapter 15) |
| 5. Planar Kinematics of a Rigid Body | (Chapter 16) |
| 6. Planar Kinematics of a Rigid Body: Force and Acceleration | (Chapter 17) |
| 7. Planar Kinematics of a Rigid Body : Work and Energy | (Chapter 18) |

This course satisfies the fundamental dynamics components of the general engineering program.

Lectures Videos Link:

<https://www.youtube.com/watch?v=yNIIWETrDF0&list=PLLBvVfERDon3nP0JRpAzze-1KfUiou4AK>



GRADING POLICY

The final grade for the course will be based on the break given below:

- Exams 75%
- Homework 10%
- Quizzes 10 %
- Class Participation 5%

There will be 3 in-class exams (25%) each. All exams must be taken at the scheduled time and date set by the instructor unless prior arrangements are made. ***No makeup exam will be given under any circumstances.*** *If you miss any of the tests for emergency reasons, evidence should be submitted by email to the instructor, and the exams' average will be calculated based on the average of two tests.*

Homework:

Grading Scale

Your final grade will be calculated based on the points you have accumulated as follows:

- A ≥ 88
- B ≥ 78 but < 88
- C ≥ 68 but < 78
- D ≥ 58 but < 68
- F < 58

ACES & Tutoring Center

- Students are reminded of the tutoring services available in the ACES and the library. These services are provided to you by the University. Check the schedules and make use of the services.

Allowed Calculators

The following will be the only calculators allowed in exams:

- Casio: All fx-115 models. Any Casio calculator must contain fx-115 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 contain either TI-30X or TI-36X in its model name.

**COURSE TOPICS AND SCHEDULE**

Week	Date	Topics	Reading	Notes
1	Monday, August 26, 2024	Revisit Statics: Force, component, resultants, equilibrium		
	Wednesday, August 28, 2024	Revisit Statics: centroid, moment of Inertia		
2	Monday, September 2, 2024	Labor day holiday		
	Wednesday, September 4, 2024	Syllabus and Introduction to Rectilinear Kinematics	12.1	
3	Monday, September 9, 2024	Rectilinear Kinematics: Continuous Motion	12.1-12.2	
	Wednesday, September 11, 2024	Rectilinear Kinematics	12.2-12.3	
4	Monday, September 16, 2024	Erratic Motion	12.3	
	Wednesday, September 18, 2024	Curvilinear Motion	12.4-12.5	
5	Monday, September 23, 2024	Curvilinear Motion	12.5	
	Wednesday, September 25, 2024	Projectile	12.6	
6	Monday, September 30, 2024	Curvilinear Motion: Normal and Tangential Components	12.7	
	Wednesday, October 2, 2024	Absolute Dependent Motion Analysis of Two Particles	12.9-12.10	
7	Monday, October 7, 2024	Exam #1 Review		
	Wednesday, October 9, 2024	Exam #1		
8	Monday, October 14, 2024	Equations of Motion	13.1-13.3	



	Wednesday, October 16, 2024	Equations of Motion: Rectangular Coordinates	13.4	
9	Monday, October 21, 2024	Equations of Motion: Normal and Tangential Coordinates	13.5	
	Wednesday, October 23, 2024	The Principle of work and Energy & System of Particles	14.1	
10	Monday, October 28, 2024	The Principle of work and Energy & System of Particles	14.1-14.3	
	Wednesday, October 30, 2024	Conservation of Energy	14.5-14.6	
11	Monday, November 4, 2024	Exam #2 Review		
	Wednesday, November 6, 2024	Exam #2		
12	Monday, November 11, 2024	The principle of Linear Impulse and Momentum	15.1	
	Wednesday, November 13, 2024	Conservation of Linear Momentum for systems of Particles	15.2-15.3	
13	Monday, November 18, 2024	Angular Momentum, Moment of A-Force and principle of Angular Impulse and momentum	15.5-15.7	
	Wednesday, November 20, 2024	Moment Of Inertia	17.1	
14	Monday, November 25, 2024	Planar Kinetic Equations of Motion: Translation	17.2-17.3	
	Wednesday, November 27, 2024	Planar Rigid Body Motion	16.1-16.3	
15	Monday, December 2, 2024	Planar Kinetic Equations of Motion: Translation	18.1-18.4	
		Final exam review		



	Wednesday, December 4, 2024			
16	Final EXAM date TBD	Final exam		

Note: The above schedule is tentative and is subjected to change.

Class Attendance Policy

Academic Honesty

During exams and quizzes, you are not allowed to use any form of wifi-enabled electronic device, including cell phones or other electronic communication devices or methods (wristwatches, earbuds, etc.). No wristwatch or another electronic device may be worn. Calculators may be subject to inspection. You may be asked to temporarily remove glasses to allow for their inspection.

You may not bring backpacks, hats, or bulky coats into the exam room. Lockers are not available at the exam site so plan and leave your belongings in a secure location. You may NOT sit them in the corner of the exam room.

You must show your work for all problems. You must use the paper provided by the instructor. If no work is shown, you may not receive credit. After the exam, the instructor may require you to explain how you solved a problem on the exam. If you refuse to or cannot explain your work, you may be subject to discipline.

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if you have a cellphone or other electronic device capable of communication on your person; or if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities, and you may receive a zero on the exam and an F in the class. Other actions, including suspension, may also be pursued.

No one will be allowed to leave the room during an exam. This includes restroom breaks.

University approved recording devices may be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

If you are suspected of scholastic dishonesty, you may or may not be directly confronted about your conduct by the instructor or proctor. You will, however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam may not be admissible. Your grade in the class may not be available until OSCCR makes a final ruling; this may adversely impact your ability to enroll in other classes.



If you arrive more than 15 minutes late to an exam, you will not be allowed to take the examination.

There will be no makeup exams administered. If you have a university-approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given.

If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid.

No food or drink may be brought into the examination room.

Departmental policy allows for the use of assigned seats. All students must present their UTEP issued ID prior to and during every exam and may be required to sign in. Not having a UTEP issued ID when asked will result in forfeiture of the exam.

Scholastic dishonesty on homework, lab assignment, and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

Class Attendance Policy

Attendance is mandatory. Anyone with 5 or more absences will be dropped from the class. A drop for not attending will count toward the State Allowed Six-Drop Limit. If you are failing the class at the time of the drop, you may also be given a WF designation. Be advised that a drop could adversely impact visa status, financial aid, and other programs.

As per UTEP rules, you may be asked to show a UTEP ID at any time during class. Anyone who is present and not registered in the class will be subject to disciplinary action unless the instructor gives prior approval.

Excused Absence for Exams

The UTEP catalog allows Exam Absence to be excused ONLY for University-Recognized Activities and very specific other situations. Medical absence is NOT allowed in the UTEP catalog. For consistency with the catalog, students will NOT be excused from exams due to illness.

Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment would be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- Repeated emails and/or calls regarding subjects that have already been addressed. Once a decision has been made, or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course



material are not harassment, but repeated questions about a grade or an administrative decision are.

- Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.
- Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.
- Similar behavior towards department staff and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students and should be treated with due respect.