

Syllabus
PHYS 3351: Analytical Mechanics I
CRN: 10985
Fall 2024

INSTRUCTOR: Dr. Tunna Baruah
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(915) 747-7529

OFFICE HOURS: Tuesday and Thursday 1:30-2:30pm; or by appointment

COURSE DESCRIPTION

This is a required course on analytical mechanics for physics majors. This course objective is to teach the students about Newtonian particle dynamics using calculus. The topics to be discussed are: coordinate systems, vectors and vector calculus, Newtonian mechanics, oscillations, gravitation, calculus of variation and Lagrangian dynamics. The objective is that students can apply the methods and analyze the behavior of dynamical systems. The course will cover chapters from 1 to 7 from Marion and Thornton.

EXPECTED LEARNING OUTCOMES

At the end of this course, students will be able to:

- Understand and apply Newtonian mechanics for particles, damped and driven oscillatory motion, and gravitational force.
- Understand and apply calculus of variation.

LEARNING MODULES

This course will be delivered in face-to-face lectures.

REQUIRED TEXTBOOK

Classical Dynamics of particles and systems, by Thornton and Marion, 5th edition
ISBN-13: 978-0534408961
ISBN-10: 0534408966

COURSE ASSIGNMENTS AND GRADING

The students will be required to solve textbook problems using the techniques they learn during the course. The assessment will be made based on quizzes, homework, and tests. The grades will be determined from two midterms(40%), final(20%), quiz(20%), and homework (20%). Quizzes will be based on class work and home-work.

TECHNOLOGY REQUIREMENTS

Course content is delivered in person. The tests and quizzes will also be in person. The homework will be uploaded to Blackboard and you will need to submit your homework through Blackboard. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

COURSE COMMUNICATION:

Office Hours: Tuesdays, Thursdays: 1:30-2:30 p.m. Mountain Time

Email: UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24-48 hours of receipt. When e-mailing me, be sure to email from your UTEP student account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name.

Discussion Board: If you have a question that you believe other students may also have, please post it in the Help Board of the discussion boards inside of Blackboard. Please respond to other students' questions if you have a helpful response.

Announcements: Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

ETIQUETTE/NETIQUETTE

Please keep these etiquette/netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

ATTENDANCE AND PARTICIPATION

Attendance in the course is determined by participation in the learning activities of the course. Your participation in the course is important not only for your learning and success but also to create a community of learners. Participation is determined by completion of the following activities:

- Reading/Viewing all course materials to ensure understanding of assignment requirements.
- Completion of the assignments.
- Participation in classroom activities.

MAKE-UP TESTS

Make-up tests will be given only in the case of a documented emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

INCOMPLETE GRADE POLICY

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an

incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services \(CASS\)](#). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the [CASS portal](#).

SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, copying answer from a website, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

Course Resources:

UTEP provides a variety of student services and support:

Technology Resources

[Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources

[UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.

[Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.

Individual Resources

[Military Student Success Center](#): Assists personnel in any branch of service to reach their educational goals.

[Center for Accommodations and Support Services](#): Assists students with ADA-related accommodations for coursework, housing, and internships.

[Counseling and Psychological Services](#): Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.

Course Schedule: Tentative test dates:

Midterm I: Sept. 24

Midterm II: Oct. 22

Midterm III: Nov. 19

Final: Dec. 10th, 1:00-3:45pm