

**THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF PHYSICS**

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| Course #: | PHYS 1403 CRN 15381 |
| Course Title: | General Physics I |
| Credit Hrs: | 4.0 |
| Term: | Fall 2019 |
| Course Meetings & Location: | Tue Thu 3:00PM – 4:20 PM, UGLC 216 |
| Instructor: | Dr. José Leo Bañuelos |
| Office Location: | PSCI 215C |
| Contact Info: | Phone # : (915) 747-7535 |
| E-mail address: | jlbanuelos@utep.edu |
| Fax #: | (915) 747-5447 |
| Emergency Contact: | (915) 747 5715 |
| Office Hrs: | Tue 11:00 am – 1:00 pm and by appointment |
| Textbook(s), Materials: | Main textbook: <i>College Physics</i> by <i>Giambattista</i> , Fifth Edition. <i>Connect</i> 2-semester access card. |

Course Objectives (Learning Outcomes):

The objective of PHYS 1403, which is the first part of a sequence of two algebra-based introductory physics courses, is to provide students with a rigorous description of physical phenomena and to improve students' problem-solving abilities. We will study the following topics: Representing Motion, Vectors in Physics, One- and Two-Dimensional Kinematics, Forces, Newton's Laws of Motion, Work and Energy, Potential Energy and Conservative Forces, Energy Conservation, Linear Momentum and Collisions, Rotational Kinematics, Rotational Dynamics, Mechanical Equilibrium, and Equilibrium and Elasticity.

Grading Policy:

Grades in this course will be based on your scores on two midterm exams, a final exam (comprehensive; but with emphasis on the last part of the course), laboratory, homework assignments, and in-class participation.

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|------------------------|---------------------|
| Midterm exams: | 40% (20% each) |
| Final exam: | 20% (comprehensive) |
| Laboratory: | 15% |
| In-Class participation | 5% |
| Homework/Quizzes: | 20% |

Course Activities/Assignments:

1. Homework

It is essential you develop good problem solving methods: this includes developing writing skills to set up a problem, including diagrams and mathematical manipulation to achieve the final answer. A numerical score will be assigned for each homework set. **Please do not fall behind because future material generally depends on previous material. Seek help immediately.** Please form study groups with your classmates and seek help from the lecture professor and any TA during his/her office hours as you attempt to solve problems. Attend the tutoring sessions

offered for this course (schedule to be posted on Blackboard). Make sure that you understand the solutions and write them up yourself!

Tutoring: The Miner Learning Center has a tutor available for this specific class. This semester's tutor is Rodrigo Mesta (rimesta@miners.utep.edu). Please take advantage of this opportunity and attend tutoring sessions. Tutoring schedule will be provided early in the semester.

REGISTER FOR ONLINE HOMEWORK BY FOLLOWING INSTRUCTIONS: *Please follow the guide posted in the Instructions, Guides, Resources link in your Blackboard homepage for this course.*

Homework is announced in advance in the lecture and via email (approximately every week). Each will consist of problems based on the course material. Extra credit problems will be given occasionally.

2. In-class Participation

You are required to install the iClicker Reef Student App which is a device polling system that will be used during each lecture to answer questions in class and record your in-class participation. Download iClicker Reef and create a new account if you do not already have one. Search for my iClicker course: **PHYS 1403 CRN 15381 FALL 2019.**

Your participation in **iClicker** polling sessions each lecture will be used to monitor your attendance in this semester's course (**worth 5% of your grade**). Make sure your mobile device (laptop, cell phone, etc) is charged BEFORE coming to class.

Short quizzes will be given occasionally in class, or assigned to be completed online before class. These will be based on pre-class assigned reading or short videos. If not announced in the previous session, these may be announced via email so please check your email often.

3. Exams

Exams will consist of problems very similar to the worked example problems in the text and the assigned homework problems. Exams will be closed-book unless I state otherwise. You should bring with you a pocket calculator to work out the answers to numerical problems: **make sure the battery is charged.** Cell phone use is NOT ALLOWED during the exams!

Dates of the midterm exams will be announced in class ahead of time. **The final exam will take place Thursday, December 12th from 4:00pm-6:45pm in UGLC 216.** For information regarding UTEP's final exam policy visit the link: <https://www.utep.edu/student-affairs/registrar/Scheduling/ExamScheduleFall2019.pdf>

The best way to prepare for the exams is to study the example problems, work out the assigned homework problems regularly, and complete any revision guides given to you.

You should work as many additional problems from the text as you can: this is the best way to ensure your understanding of the material.

Make-up Policy:

An extension of the due date for the homework as well as the make-up of missing exams will be granted only in extraordinary circumstances. Late homework will be penalized at a rate of 8% of the maximum score for each day it is late.

Attendance Policy: No credit will be granted for just attending the class. You are expected to arrive to class on time, and participate in all problem-solving exercises.

Academic Integrity Policy:

A fundamental principle for any educational institution, academic integrity is highly valued and seriously regarded at The University of Texas at El Paso. More specifically, students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Please see: <https://www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html> for more information and the UTEP Handbook of Operating Procedures:

<https://www.utep.edu/vpba/hoop/>

Civility Statement:

Cell phones and pagers should be turned off during class time.

When absences occur, it is your responsibility to obtain handouts and notes from your peers. When possible you will complete the activities you have missed.

Academic integrity is to be practiced at all times.

Disability Statement:

If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East Building, Room 106. For additional information, please visit the CASS website at <https://www.utep.edu/student-affairs/cass/>. The student is responsible for presenting to the instructor any accommodation letters and instructions.

Military Statement:

If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor at the beginning of the semester.

Tentative Course Outline:

| Lecture | Topic | Description | Lecture | Topic | Description |
|---------|-------|---|---------|-------|---|
| 1 | CH1 | Introduction | 17 | CH7 | 7.1 A Conservation Law for a Vector Quantity. |
| 2 | CH2 | 2.1 Interactions and Forces | | | 7.2 Momentum. |
| | | 2.2 Graphical Vector Addition | | | 7.3 The Impulse-Momentum Theorem. |
| | | 2.3 Vector Addition Using Components | 18 | | 7.4 Conservation of Momentum. |
| 3 | CH2 | 2.4 Inertia and Equilibrium: Newton's First Law of Motion | | CH7 | 7.5 Center of Mass. |
| | | 2.5 Interaction Pairs: Newton's Third Law of Motion | | | 7.6 Motion of the Center of Mass. |
| | | 2.6 Gravitational Forces | 19 | | 7.7 Collisions in One Dimension. |
| 4 | | 2.7 Contact Forces | | | 7.8 Collisions in Two Dimensions. |
| | | 2.8 Tension | 20 | CH8 | 8.1 Rotational Kinetic Energy and Rotational Inertia. |
| | | 2.9 Fundamental Forces | | | 8.2 Torque. |
| 5 | | | | | 8.3 Calculating Work Done from the |
| 6 | CH3 | 3.1 Position and Displacement. | 21 | | 8.4 Rotational Equilibrium. |
| | | 3.2 Velocity. | | CH8 | 8.5 Application: Equilibrium in the |
| | | 3.3 Acceleration and Newton's Second Law of Motion. | | | 8.6 Rotational Form of Newton's Second Law. |
| 7 | CH3 | 3.4 Applying Newton's Laws. | 22 | | 8.7 The Motion of Rolling Objects. |
| | | 3.5 Velocity Is Relative; Reference Frames. | | | 8.8 Angular Momentum. |
| 8 | CH4 | 4.1 Motion Along a Line when the Net Force Is Constant. | | | 8.9 The Vector Nature of Angular Momentum. |
| | | 4.2 Kinematic Equations for Motion Along a Line with Constant Acceleration. | 23 | | M2 review |
| | | 4.3 Applying Newton's Laws with Constant-Acceleration Kinematics. | 24 | | M2 exam |
| 9 | CH4 | 4.4 Free Fall. | 25 | CH9 | 9.1 States of Matter. |
| | | 4.5 Motion of Projectiles. | | | 9.2 Pressure. |
| | | 4.6 Apparent Weight. | | | 9.3 Pascal's Principle. |
| 10 | CH5 | 5.1 Description of Uniform Circular Motion. | | | 9.4 The Effect of Gravity on Fluid |
| | | 5.2 Radial Acceleration. | | | 9.5 Measuring Pressure. |
| | | 5.3 Unbanked and Banked Curves. | 26 | CH9 | 9.6 The Buoyant Force. |
| 11 | CH5 | 5.4 Circular Orbits of Satellites and | | | 9.7 Fluid Flow. |
| | | 5.5 Nonuniform Circular Motion. | | | 9.8 Bernoulli's Equation. |
| | | 5.6 Angular Acceleration. | 27 | | 9.9 Viscosity. |
| | | 5.7 Apparent Weight and Artificial Gravity. | | | 9.10 Viscous Drag. |
| 12 | | Review M1 | | | 9.11 Surface Tension. |
| 13 | | Midterm 1 | 28 | CH10 | 10.1 Elastic Deformations of Solids. |
| 14 | CH6 | 6.1 Preview of the Law of Conservation of Energy. | | | 10.2 Hooke's Law for Tensile and Compressive Forces. |
| | | 6.2 Work Done by a Constant Force. | | | 10.3 Beyond Hooke's Law. |
| | | 6.3 Kinetic Energy. | | | 10.4 Shear and Volume Deformations. |
| 15 | CH6 | 6.4 Gravitational Potential Energy (1). | 29 | CH10 | 10.5 Simple Harmonic Motion. |
| | | 6.5 Gravitational Potential Energy (2). | | | 10.6 The Period and Frequency for |
| | | 6.6 Work Done by Variable Forces. | | | 10.7 Graphical Analysis of SHM. |
| 16 | | 6.7 Elastic Potential Energy. | 30 | CH10 | 10.8 The Pendulum. |
| | | 6.8 Power. | | | 10.9 Damped Oscillations. |
| | | | | | 10.10 Forced Oscillations and Resonance. |