

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

Course #:	PHYS 1403 CRN 11457												
Course Title:	General Physics I												
Credit Hrs:	4.0												
Term:	Fall 2014												
Course Meetings & Location:	MW 11:30 – 12:50 p.m., LART room 108												
Prerequisite Courses:	-												
Course Fee: (if applicable)	-												
Instructor:	Dr. Felicia Manciu												
Office Location:	PSCI 215 C												
Contact Info:	Phone # : (915) 747 8472												
	E-mail address: fsmanciu@utep.edu												
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Office Hrs:	Monday, Wednesday 1:00 – 3:00 p.m												
Textbook(s), Materials:	Main textbook: <i>College Physics special edition for University of Texas at El Paso</i> by Alan Giambattista, Betty McCarthy Richardson, and Robert C. Richardson (Fourth Edition). Other materials: Physics 1403, <i>General Physics I Laboratory</i> by William G. Durrer												
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: Introduction, 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, Elasticity and Oscillations.												
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, and homework assignments. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Midterm exams:</td> <td>40%</td> <td>(20% each)</td> </tr> <tr> <td>Final exam:</td> <td>25%</td> <td>(comprehensive)</td> </tr> <tr> <td>Laboratory</td> <td></td> <td>15%</td> </tr> <tr> <td>Homework:</td> <td></td> <td>20%</td> </tr> </table>	Midterm exams:	40%	(20% each)	Final exam:	25%	(comprehensive)	Laboratory		15%	Homework:		20%
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<p>Course Activities/Assignments:</p>	<p>Homework</p> <p>It is essential that students become well versed in problem solving methods, which means developing the 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 based on graded and counted problems.</p> <p>Feel free to form study groups with your classmates and seek help from any lecture instructor during his or her office hours as you attempt to solve the problems. Make sure that you understand the solutions and write them up yourself. <u>There is a strong correlation between homework scores and exam scores!</u></p> <p><u>The textbook is bundled together with the online Connect resource registration package.</u></p> <p><u>REGISTER FOR ONLINE HOMEWORK. EACH STUDENT WILL NEED HIS OWN REGISTRATION PACKAGE FOR THE HOMEWORK.</u></p> <p>The online homework will be announced in advance in the lecture (approximately every week). Each will consist of few problems based on the course material.</p> <p>Exams</p> <p>Exams will consist of problems very similar to the worked example problems in the text and the assigned homework problems. Exams will be strictly closed-book. You should bring with you a pocket calculator to work out the answers to numerical problems: make sure the battery is charged!</p> <p>No cell phones allowed in the exams!</p> <p>Full credit on exams will be awarded for complete solutions including drawing a figure and deriving necessary relations if appropriate, and for numerically accurate answers with units. Partial credit may be given for correct derivations if the answer is numerically incorrect due to arithmetic errors. No credit will be given for relations written down at random or for numerical answers that are not supported by a reasonably complete derivation.</p> <p>The best way to prepare for the exams is to study the example problems and work out the assigned homework problems regularly. 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.</p>
<p>Make-up Policy:</p>	<p>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.</p>
<p>Attendance Policy:</p>	<p>No credit will be granted for just attending the class.</p>
<p>Academic Integrity Policy:</p>	<p>Please see: http://academics.utep.edu/Default.aspx?tabid=23785</p>

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<p>Civility Statement:</p>	<ul style="list-style-type: none"> • 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.
<p>Disability Statement:</p>	<p>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 www.sa.utep.edu/cass. The student is responsible for presenting to the instructor any accommodation letters and instructions.</p>
<p>Military Statement:</p>	<p>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.</p>
<p>Course Schedule:</p>	<p><u>INTRODUCTION</u></p> <ul style="list-style-type: none"> • Why Study Physics? • Talking Physics • The Use of Mathematics • Scientific Notation and Significant Figures • Units • Dimensional Analysis • Solving-Problem Techniques • Approximation • Graphs <p><u>FORCE</u></p> <ul style="list-style-type: none"> • Interaction and Forces • Graphical Vector Addition • Vector Addition Using Components • Inertia and Equilibrium: Newton’s First Law of Motion • Interaction pairs: Newton’s Third law of Motion • Gravitational Forces • Contact Forces • Tension • Fundamental Forces <p><u>ACCELERATION AND NEWTON’S SECOND LAW OF MOTION</u></p> <ul style="list-style-type: none"> • Position and Displacement • Velocity • Acceleration and Newton’s Second Law of Motion • Applying Newton’s Laws • Velocity is Relative; Reference Frames

Course Schedule:

MOTION WITH CONSTANT ACCELERATION

- Motion Along a Line When the Net Force is Constant
- Kinematic Equations for Motion Along a Line with Constant Acceleration
- Applying Newton's Laws With Constant Acceleration Kinematics
- Free Fall
- Motion of Projectiles
- Apparent Weight

CIRCULAR MOTION

- Description of Uniform Circular Motion
- Radial Acceleration
- Unbanked and Banked Curves
- Circular Orbits of Satellites and Planets
- Nonuniform Circular Motion
- Angular Acceleration
- Apparent Weight and Artificial gravity

CONSERVATION OF ENERGY

- Review the Law of Conservation of Energy
- Work Done by a Constant Force
- Kinetic Energy
- Gravitational Potential Energy (1)
- Gravitational Potential Energy (2)
- Work Done by Variable Forces
- Elastic Potential Energy
- Power

LINEAR MOMENTUM

- A Conservation Law for a Vector Quantity
- Momentum
- The Impulse-Momentum Theorem
- Conservation of Momentum
- Center of Mass
- Motion of the Center of Mass
- Collision in One Dimension
- Collision in Two Dimensions

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Course Schedule:**TORQUE AND ANGULAR MOMENTUM**

- Rotational Kinetic Energy and Rotational Inertia
- Torque
- Calculating Work Done from a Torque
- Rotational Equilibrium
- Application: Equilibrium in the Human Body
- Rotational Form of Newton's Second Law
- The Motion of Rolling Objects
- Angular Momentum
- The Vector Nature of Angular Momentum

ELASTICITY AND OSCILLATIONS

- Elastic Deformation of Solids
- Hooke's Law for Tensile and Compressive Forces
- Beyond Hooke's Law
- Shear and Volume Deformations
- Simple harmonic Motion
- The Period and Frequency for SHM
- Graphical Analysis of SHM
- The Pendulum
- Damped Oscillations
- Forces Oscillations and Resonance