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

Course #:	PHYS 1403 CRN 30649
Course Title:	General Physics I
Credit Hrs:	4.0
Term:	Summer 2016
Course Meetings & Location:	MTWRF 11:40 am – 1:50 pm, College of Busines Admin 318
Prerequisite Courses:	-
Course Fee: (if applicable)	-
Instructor:	**Dr. Huiyan Yang**
Office Location:	PSCI 215 B
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	E-mail address: hyang4@utep.edu
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Office Hrs:	TR 10:30 am – 11:30 am, or through appointment
Textbook(s), Materials:	**Main textbook: *College Physics,*** 4th edition, by Alan Giambattista, Betty McCarthy Richardson, and Robert C. Richardson (UTEP Edition strongly preferred, but any edition might be used since the homework is posted online.). ***McGraw-Hill connect access code*** for homework assignments. A code comes with a new textbook or can be purchased online.
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, One-Dimensional Kinematics, Vectors in Physics, Two-Dimensional Kinematics, 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.

Quizzes	10%	
Midterm exams	30%	(15% each)
Final exam	30%	(comprehensive)
Laboratory	15%	
Homework	15%	

Course Activities/Assignments:	**Homewoork** Supplementary reading, answering questions, and solving problems will be assigned in advance in the lecture. Also, our textbooks come with problems at the end. 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. Homework will be assigned (and graded) in McGraw-Hill connect : https://connect.mheducation.com/class/phys-1403-summer-2016 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. **There is a strong correlation between homework scores and exam scores!** **Quizzes** You will have quizzes which will be announced in advance in the lecture (approximately twice every week). Each will consist of a short, free answer problem, based on the course material. No make-up quizzes will be given. **Exams** 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!** No cell phones or smart phones allowed in the exams! 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. 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.
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.
Attendance Policy:	No credit will be granted for just attending the class.
Academic Integrity Policy:	Please see: http://academics.utep.edu/Default.aspx?tabid=23785

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 www.sa.utep.edu/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.
Course Schedule:	**INTRODUCTION** • Why Study Physics? • Talking Physics • The Use of Mathematics • Scientific Notation and Significant Figures • Units • Dimensional Analysis • Solving-Problem Techniques • Approximation • Graphs **FORCE AND NEWTON'S LAWS OF MOTION** • Force • Inertia and Equilibrium: Newton's First Law of Motion • Net Force, Mass, and Acceleration: Newton's Second law of Motion • Interaction pairs: Newton's Third law of Motion • Gravitational Forces • Contact Forces • Tension • Applying Newton's Second Law • Reference Frames • Apparent Weight • Fundamental Forces

Course Schedule:	**MOTION ALONG A LINE** • Position and Displacement • Velocity: Rate of Change of Position • Acceleration: Rate of Change of Velocity • Motion Along a Line with Constant Acceleration • Visualizing Motion Along a Line with Constant Acceleration • Free Fall **MOTION IN A PLANE** • Graphical Addition and Subtraction of Vectors • Vector Addition and Subtraction Using Components • Velocity • Acceleration • Motion in a Plane with Constant Acceleration • Velocity is Relative; Reference Frames **CIRCULAR MOTION** • Description of Uniform Circular Motion • Radial Acceleration • Unbanked and Banked Curves • Circular Orbits of Satellites and Planets • Nonuniform Circular Motion • Tangential and Angular Acceleration • Apparent Weight and Artificial gravity **CONSERVATION OF ENERGY** • The Law of Conservation of Energy • Work Done by a Constant Force • Kinetic Energy • Gravitational Potential Energy • Work Done by variable Forces: Hooke's Law • Elastic Potential Energy • Power **LINEAR MOMENTUM** • Conservation Law of 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

Course Schedule:	**TORQUE AND ANGULAR MOMENTUM** • Rotational Kinetic Energy and Rotational Inertia • Torque • Calculating Work Done from a Torque • Rotational Equilibrium • 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 • Sheer and Volume Deformations • Simple harmonic Motion • The Period and Frequency of a SHM • Graphical Analysis of SHM • The Pendulum • Damped Oscillations • Forces Oscillations and Resonance