Course Information

Course Number/Section	PHYS 1301.001
Course Title	College Physics I
Term	Spring 2020
Days & Times	Tuesday, Thursday 11:30 – 12:45 PM
Room	SLC 1.102 (Online after 15/03)

Instructor Contact Information

Instructor	Dr. Amena Khan
E-mail	khan@utdallas.edu
Office Hours	Monday, Wednesday 11:30 – 1:00
Location	Online (https://utdallas.webex.com/meet/axk140130)

TA Office Hours

Monday, 2:00p-4:00p: Reema McMullen https://utdallas.webex.com/meet/rxm172530
Tuesday, 10:00a-11:00a: Stanislav Cherepanov https://utdallas.webex.com/meet/sxc179830
Tuesday, 1:00p-3:00p: Xiaoyuan Liu https://utdallas.webex.com/meet/xxl147030
Thursday, 10:00a-11:00a: Stanislav Cherepanov https://utdallas.webex.com/meet/sxc179830
Thursday, 1:00p-3:00p: Angel Romero https://utdallas.webex.com/meet/aer140130
Friday, 9:30a-11:30a: Umar Javed https://utdallas.webex.com/meet/uxj170230
Friday, 2:00p-4:00p: Xurui Zhang https://utdallas.webex.com/meet/zxx150430

University supported Tutoring:

Through the Student Success Center, https://www.utdallas.edu/studentsuccess/.
https://www.utdallas.edu/studentsuccess/help-with-courses/peertutoring/

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites: MATH 1314 (College Algebra) or equivalent. Students must register for Physics Lab II (PHYS 2125). No exceptions to these will be allowed without the instructor's and/or other advisor's permission. Familiarity with basic mathematics (including algebra, geometry and trigonometry) is assumed.

Course Description

3 Credit Hours. Algebra based. An introductory course on the basic fundamentals of physics including a study of space and time, kinematics, forces, energy and momentum, conservation laws, periodic motion, waves and thermodynamics.

Student Learning Objectives/Outcomes

Upon completing this course, students will:
• Be able to compute the sum, scalar multiplication, and vector multiplication of vectors
• Be able to analyze and explain the components of linear and rotational motion (displacement, velocity, acceleration) including graphs and their interrelationships
• Be able to apply different forces and work force problems including the fundamental force of gravity and Newton's laws
• Be able to classify the different forms of energy and use the conservation of energy to work problems

• Be able to define momentum and collisions
• Be able to give examples of rotational variables and the relationship between linear and rotational variables
• Explain simple harmonic motion and waves including their properties.
• Identify and describe fluids in motion and at rest and interpret basic laws of thermodynamics

Required Textbooks and Materials
Required Texts
1. College Physics, 10th edition, by Hugh D. Young (**with Masteringphysics.com access**). You can also use 8th and 9th editions. Other texts at the same level are also OK.
Publisher: Pearson
ISBN-13: 978-0321902788
ISBN-10: 0321902785

2. Mastering Physics Student Kit, which is access to http://www.masteringphysics.com.

Suggested Course Materials
Suggested Readings/Texts
Schaum's Outline – College Physics ISBN-13: 978-0071754873 (~$15)
Schaum's Outline – 3,000 Solved Problems in Physics ISBN-13: 978-0071763462 (~$20)

Assignments & Academic Calendar
Topics, Reading Assignments, Exam Dates

10^{th} Edition

Topic	Study Assignment (Chapter in Text)
Mathematics Review	0
Exponents	0.1
Scientific Notation and Powers of 10	0.2
Algebra	0.3
Direct, Inverse, and Inverse-square Relationships	0.4
Data Driven Problems	0.5
Logarithmic and Exponential Functions	0.6
Areas and Volumes	0.7
Plane Geometry and Trigonometry	0.8
Models, Measurements, and Vectors	1
Introduction	1.1
Idealized Models	1.2
Standards and Units	1.3
Dimensional Consistency and Unit Conversions	1.4
Precision and Significant Figures	1.5
Estimates and Orders of Magnitude	1.6
Vectors and Vector Addition	1.7
Components of Vectors	1.8
Motion Along A Straight Line	2
Displacement and Average Velocity	2.1
Instantaneous Velocity	2.2
Average and Instantaneous Acceleration	2.3
Motion with Constant Acceleration	2.4
Proportional Reasoning	2.5
Freely Falling Bodies	2.6

Relative Velocity Along a Straight Line	2.7	
Motion in a Plane	3	
Velocity in a Plane	3.1	
Acceleration in a Plane	3.2	
Projectile Motion	3.3	
Uniform Circular Motion	3.4	
Relative Velocity in a Plane	3.5	
Newton's Laws of Motion	4	
Force	4.1	
Newton's First Law	4.2	
Mass and Newton's Second Law	4.3	
Mass and Weight	4.4	
Newton's Third Law	4.5	
Free-Body Diagrams	4.6	
Applications of Newton's Laws	5	
Equilibrium of a Particle	5.1	
Applications of Newton's Second Law	5.2	
Contact Forces and Friction	5.3	
Elastic Forces	5.4	
Forces in Nature	5.5	
EXAM 1		About March 2
Circular Motion and Gravitation	6	
Force in Circular Motion	6.1	
Motion in a Vertical Circle	6.2	
Newton's Law of Gravitation	6.3	
Weight	6.4	
Satellite Motion	6.5	
Work and Energy	7	
An overview of Energy	7.1	
Work	7.2	
Work and Kinetic Energy	7.3	
Work done by a Varying Force	7.4	
Potential Energy	7.5	
Conservation of Energy	7.6	
Conservative and Nonconservative Forces	7.7	
Power	7.8	
Momentum	8	
Momentum	8.1	
Conservation of Momentum	8.2	
Inelastic Collisions	8.3	
Elastic Collisions	8.4	
Impulse	8.5	
Center of Mass	8.6	
Motion of the Center of Mass	8.7	
Rocket Propulsion	8.8	
Rotational Motion	9	
Angular Velocity and Angular Acceleration	9.1	
Rotation with Constant Angular Acceleration	9.2	
Relationship Between Linear and Angular Quantities	9.3	

Kinetic Energy of Rotation and Moment of Inertia	9.4	
Rotation about a Moving Axis	9.5	
Dynamics of Rotational Motion	10	
Torque	10.1	
Torque and Angular Acceleration	10.2	
Work and Power in Rotational Motion	10.4	
Angular Momentum	10.5	
Conservation of Angular Momentum	10.6	
Equilibrium of a Rigid-Body	10.3	
Vector Nature of Angular Quantities	10.3	
EXAM 2		April 14
Elasticity and Periodic Motion	11	
Stress, Strain and Elastic Deformations	11.1	
Periodic Motion	11.2	
Energy and Simple Harmonic Motion	11.3	
Equations of Simple Harmonic Motion	11.4	
The Simple Pendulum	11.5	
Mechanical Waves and Sound	12	
Mechanical Waves	15.1	
Periodic Mechanical Waves	15.2	
Other sections as time permits		
Fluid Mechanics	13	
Density	12.1	
Pressure in a Fluid	12.2	
Buoyancy	12.3	
Fluid Flow	12.4	
Bernoulli's Equation	12.5	
Viscosity and Turbulence	12.6	
Other sections as time permits		
Temperature and Heat	14	
Thermal Properties of Matter	15	
The Second Law of Thermodynamics	16	
FINAL EXAM		During Exam Week

Class Materials
Electronic copies of power point slides used in class will be posted in eLearning (go to eLearning on the UTD home page). Log in to the section for this class listed as PHYS 1301, Section 001. Use the slides as guides to prepare your own hand-written notes.

Problem Assignments
We will use the Pearson Mastering Physics homework system.
Each of you need to have a code, a set of words, to access the Mastering Physics programs.
You should have gotten this code when you obtained your textbook.

Go to www.masteringphysics.com. On the homepage register under "students" and follow the instructions.

Weekly assignments will set for each of the chapters that we will be covering throughout the semester.

Problems in the assignments are for the most part taken from the exercise problem section at the end of each chapter.

The due date for each set of homework problems will be given at the end of each assignment.

Please read all the instructions and tutorials on how to use Mastering Physics.
Hints are given that may freely be used to help you solve the problems. You must submit a complete set of problems on which you will be graded. Many of the problems will have different numbers as input data to the problem. While the problems are identical, the numerical answers will be different. You will be graded on the specific problems that you submit.

Examinations and quizzes
There will be 3 major exams.

Pop quizzes (in class and online) will be given throughout the semester and will cover the topics studied in the course.

You will be responsible only for the material covered in class, whether or not it is in the textbook. Therefore it is imperative that you attend all classes so you will have access to the material on which you will be tested.

Grading policy

Exams

3 exams in total – Exam 1, Exam 2 and Final Exam = 70%

Exams 1 and Exam 2* will be held approximately at the 1/3, 2/3 of the semester for which the dates will be announced approximately 2 weeks prior. Exams 1 and 2 will constitute 40% of the final grade and will be weighted as follows. The lower exam out of the two will be valued at 15% and the higher one at 25%.

Final Exam* will be comprehensive and will constitute 30% of the final grade. Final exams are not returned to the student but are held for review for one year.

*Exam 2 and Final Exam will be held online.

Each exam will be given a numerical score.
Equivalent letter grades will be made available at the end of the course.

Quizzes, Homework and Class Participation (Mastering Physics) = 28%

The Mastering Physics homework will count 23% of the grade. Pop quizzes will constitute 5 %. Extra credit will be awarded for Class Participation.

Learning Evaluation =2%+1%Bonus

You are asked to do two quizzes as part of your introductory physics course. The quizzes consist of multiple choice questions and are useful to the department in gathering information about the effectiveness of our courses.

You will be awarded 2% on taking the first quiz. And 1% bonus automatically as the post-test will no longer be available.

Improper deportment in class, if serious enough, could result in the reduction of your final grade.

Grade Scale
A- : requires a minimum of 88%
B- : requires a minimum of 76%
C- : requires a minimum of 64%
D- : requires a minimum of 52%
F: below 52%

Final grading will be on a curve.

Technical Support
If you experience any problems with your UTD account, you may send an email to: assist@utdallas.edu or eLearning@utdallas.edu. You may also call the UTD Computer Helpdesk at 972-883-2911.

Course & Instructor Policies
Make-up exams
There will be no make-up exams, except for prearranged serious interferences that you can document PRIOR to the date of the exam. E-mail Dr. Khan your request for missing the exam and the reason BEFORE the exam is given.

Extra Credit
1 % Physics Primer
Up to 3 % or so overall grade can be obtained via Class Participation.
1% for the second Learning Evaluation test no longer being undertaken.

Late Work
Homework assignments should be completed by the due date. Late submissions will be accepted. Although it is highly encouraged to complete the homework in time to keep up with the pace of the course.

Special Assignments
None

Online Class Attendance
Highly encouraged. Exams and Quizzes are based on the material covered in class.

Classroom Citizenship
For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regards to all class interactions.

Disruption of class will be grounds for reduction in your grade.

Cell phone and beepers are to be turned off during class time.

During class time please mute your computer and "raise hand" to ask questions.

Class will be in session 15 minutes prior to class time. Please be on time.

Comet Creed
This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

University Policies and Procedures
The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to https://go.utdallas.edu/syllabus-policies for these policies.

These descriptions and timelines are subject to change at the discretion of the Professor.