北京交通大學
BEIJING JIAOTONG UNIVERSITY

Beijing Jiaotong University

2020 Summer Session

PHY 101 Introduction to Physics with Lab

Course Outline

Term: July 13-August 7, 2020

Class Hours: 16:00-17:50 (Monday through Friday)

Course Code: PHY 101

Instructor: Deepak Sainju, Ph.D.

Home Institution: University of Connecticut

Office Hours: TBA and by appointment

Email: deepak.sainju@uconn.edu

Credit: 4

Class Hours: This course will have 52 class hours, including 32 lecture hours, 8 professor office hours, 8 TA discussion session hours, and 4 review session hours.

Course Description:
Physics 101 is an introductory college physics course. It teaches fundamental principles of physics by using algebra and trigonometry. We will explore the principles and applications of classical mechanics, including Newton's laws of motion and gravitation, circular motion, harmonic motion, physical systems, with emphasis on problem solving.

Labs

Lab counts 20% towards the course score. Experiments are avery importantpart of this course. All the labs must be completed inorder to pass the course.

There will be 2 hours for each experiment and there will be 5 experiments intotal. Students should carry out the experiment by one self under the instruction of the professor.

The experiment should be performed singly.

Students should write the lab report singly.

Students should read the lab manual beforehand. Lab reports must be turned in to your TA at the beginning of or before the next lab period. Late reports will not be accepted.

Course Objectives:

After successful completion of this course, studentds should understand certain basic concepts of Physics, such as:

1. Demonstrate knowledge of basic physical units and their relationships.
2. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
3. Apply Newton's laws to physical problems including gravity.
4. Solve problems using principles of energy.
5. Use principles of impulse and momentum to solve problems.

6. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
7. Solve problems involving rotational and linear motion.
8. Define equilibrium, including the different types of equilibrium.
9. Discuss simple harmonic motion and its application to real-world problems.
10. Solve problems using the principles of heat and thermodynamics.
11. Solve basic fluid mechanics problems.

Textbooks

Required: James S. Walker, Physics, 5th ed., Vol. 1, Pearson
(hard copy and e-text available); online MasteringPhysics homework system also required.
Required: i>clicker 2

Online Material and Homework
We will be using online homework. You are required to have MasteringPhysics access: https://www.pearsonmylabandmastering.com/northamerica/.
The 'Course ID' for this course is: (will be given after class starts)

Midterm Exam
There will be one full-period in-class exam. You may bring one handwritten or typed (no photocopies) 8.5" x 11" page of notes (two sides) in the exam. It must be turned in with your exam papers and cannot contain solutions to assignment or other problems.

Final Exam

The final exam is cummulative and mandatory. You may bring one handwritten or typed 8.5" x 11" page to the final exam. It must be turned in with your exam papers and cannot contain solutions to assignment or other problems.

Grading:

Lab:	**20%**
Homework:	**25%**
Clickers/Class Participation	**5%**
Midterm Exam:	**25%**
Final exam:	**25%**

Grading Scale:

A: 92 – 100	C+: 78 – 79
A-: 90 - 91	C: 72 – 77
B+: 88 – 89	C-: 70 - 71
B: 82 – 87	D+: 68 – 69
B-: 80 - 81	D: 62 – 67
	D-: 60 - 61
	F: 59

Syllabus (subject to change)

Week No.	Date	Topics	Labs
1	July 13	Introduction; 1-D Kinematics (Chs. 1, 2)	
	July 14	Vectors, 2-D Kinematics (Chs. 3,4)	
	July 15	Vectors, 2-D Kinematics (Chs. 3,4)	Measurement
	July 16	Newton's Laws & Application (Ch. 5,6)	Projectile motion
2	July 20	Newton's Laws & Application (Ch. 5,6)	
	July 21	Newton's Laws & Application (Ch. 5,6)	
	July 22	Work & Kinetic Energy (Ch. 7)	
	July 23	PE & Energy Conservation (Ch. 8)	Acceleration
3	July 27	Momentum & Collisions (Ch. 9)	
	July 28	Rotational Kinematics (Ch. 10)	
	July 29	Rotational Dynamics (Ch. 11)	
	July 30	Gravity (Ch. 12)	Momentum
4	Aug 3	Oscillations (Ch. 13)	
	Aug 4	Oscillations (Ch. 13)	
	Aug 5	Waves & Sound (Ch. 14)	
	Aug 6	Fluids (Ch. 15)	Hooke's Law