

UNIVERSITY OF MARYLAND, College Park

Physics 171 Introductory Physics: Mechanics and Relativity Spring 2016

Description: This course is the first semester of a three semester sequence for physics majors and those desiring a rigorous preparation in the physical sciences. Topics covered are described in the schedule below.
Prerequisites: High school physics course, MATH140, MATH141 (can be concurrently enrolled).

Lectures: Tu Th 12:30pm - 1:45pm, Fri 12:00am - 12:50pm in [PHY 1204](#)
Lecturer: Prof. B. L. Hu, Office: PSC3153, Phone: 301-405-6029, Email: blhu@umd.edu Mailbox in Physics Dept (Toll Bldg) #425. Office hours: Tu Th 2-3pm or email for individual appointments.
TA: Office: _____, Phone: . Email: Mail Box #

Textbooks Required: Douglas C. Giancoli, *Physics for Scientists and Engineers 4thed* (Pearson 2009)

Reading: The approximate progression of topics can be found in the Course Schedule for the planned topic for each lecture. The schedule may lag or advance by one lecture if some topics take more or less time than expected. To enhance your comprehension of a particular subject to be covered, you *should try to read the material in the text before coming to the lecture*. This will enable you to ask questions about ideas you may not be able to grasp fully on the first reading and to gain a better overall perspective. Read it again after the lecture, study the examples and do the assigned problems. I encourage questions in class (to the extent time permitting, but that can be followed up in my office hours) – this could stimulate thoughts and discussions.

Course webpage: Please check for new announcements, adjustment of topics or due dates in the course website at ELMS/CANVAS system: www.elms.umd.edu/page/student-support where you will also be able to access your exam grades. For questions call the Help Desk at 301.405.1500 or email elms@umd.edu.

Homework: 13 sets of homework problems are planned, counting 30% towards your course grade. They are to be worked out and handed in at the beginning of classes on the due dates -- check the course webpage for last minute changes. Solutions will be posted soon after thus no late homework will be accepted. I encourage group discussions but stress strongly the importance of thinking through and working out the problems on your own. *Don't rely on others' help or just passively read the solutions*. It makes a real difference in your grasp of the subject matter which shows clearly in your examination performance.

Mid-Term Exams: Two 75-minute closed book mid-term exams are scheduled on **Thursdays March 10 and April 21 during the lecture periods**. Each exam is likely to contain one or more problems based on the assigned homework problems. Each exam counts 20% towards your course grade. Please make all necessary arrangements to **make sure you can take these exams** because no make-up exam will be given.

The Final Exam held on **Tuesday May 17, 1:30 -3:30pm**, is worth 30% of the course grade. It is comprehensive, with ~2/3 materials from Chap 26, 17-20. The university rule requires that all students must take the final exam to receive a course grade, otherwise the course grade will automatically be an F.

Exams are meant to test your understanding and ability to apply concepts covered in the course, not how well you can memorize the formulas or course materials. You may bring one 4x6" formulas card to each exam, totaling 3 for the final exam. The values of constants and useful integrals will be provided. Only a non-programmable calculator with standard trigonometry function is allowed, no smart phones, I-Pads etc. **Academic dishonesty is a serious violation** and will be dealt with strictly, according to University policy.

Course Grade: Your course grade is made up in the composition of 30% homework, 20% for each of the 2 mid-term exams, and 30% from your final exam scores. Total course score has 500 points maximum.

PHYSICS 171 Spring 2016 CONTENTS and SCHEDULE

Prof. B. L. Hu

Lectures: Week/Date	Readings: Chapters in <i>Giancoli, Physics for Sci & Eng</i> 4 th ed 2009	Topics:	Homework # Due Date: Thurs
1 1/26, 28, 29	Chap 1 (read)	2 Kinematics: One dimensional motion	#1 2/4
2 2/2, 4, 5	Chap 3	Kinematics in 2 & 3 dimensions; Vectors	#2 2/11
3 2/9,11,12	Chap 4-5	Dynamics: Newton's Laws of Motion, Friction	#3 2/18
4 <u>2/16</u> ,18,19	Chap 5-6	Circular motion	#4 2/25
5 2/23,25	Chap 6	Gravitation	#5 3/3
5-6 2/26,3/1,3	Chap 7	Work and Energy	#6 3/10
7 3/4, 8, 11	Chap 8	Conservation of Energy	#7 3/14
Mar 10 (Thursday) Exam 1 (Chapters 2-6)			
8 3/13-3/20	<i>Spring Break</i>		
9 3/22,24,25	Chap 9	Linear Momentum	#8 3/31
10 3/29, 31, 4/1	Chap 10	Rotational Motion	#9 4/7
11 4/5,7,8	Chap 11	Angular Momentum	#10 4/14
12-13 4/12,14,15,19	Chap 36	Theory of Special Relativity	#11 4/28
13	April 21 (Thursday) Exam 2 (Chapters 7-11)		
13 4/22	Chap 17	Temperature. Thermal Expansion. Ideal Gas Law (except Sec 5)	
14 4/26, 28	Chap 18	Kinetic Theory of Gas (mainly Sec 1-2 and Sec 6-7)	#12 5/5
14-15 4/29, 5/3	Chap 19	Heat and First Law of Thermodynamics	#13 5/10 (Tue)
15-16 5/5, 6, 10	Chap 20	Second Law of Thermodynamics	#14 (<i>no need to hand in</i>)
May 17 Tue, 1:30 -3:30pm	Final Exam (~1/3 from Chap 1-11, ~2/3 from Chap 36,17-20)		

*** *Have a Nice Summer!* ***