University of Maryland
Department of Physics
Physics 161 – FALL 2019
"General Physics: Mechanics and Particle Dynamics"

Lecture Date and Time: Tu, Th 11:00 AM – 12:15 PM
Lecture Room: 1410 Physics Building

Instructor: **Dr. Hailu Gebremariam** **email:** **hailu@umd.edu**
Office: **3109 Physics Building** **Phone:** **x5-9983**

Office Hours: **Tu 1:00 PM – 2:00 PM or by appointment**

Discussion schedule:

Section	Date and Time	Room	TA
0201	Th 8:00 – 8:50 AM	PHYS 0405	
0202	Tu 2:00 – 2:50 PM	EGR 0135	
0203	W 3:00 – 3:50 PM	CHM 0128	
0204	W 4:00 – 4:50 PM	MTH 0303	

Textbook: ***University Physics, by Young and Freedman (Pearson), 14th edition.***

- ***You will also need an expert TA account to access and complete the required Homework assignment.***

Course Description:

Prerequisite: Must have completed or be concurrently enrolled in MATH141.
Credit only granted for: PHYS141, PHYS161, or PHYS171.
First semester of a three-semester calculus-based general physics course. Laws of motion, force, and energy; principles of mechanics, collisions, linear momentum, rotation, and gravitation.

Midterm Exams: September 19, October 17, November 19

Final Exam: Thursday December 12, 6:30 PM – 8:30 PM

Important Notes:

1. Lectures:

Students are required to attend lectures, where announcements will be given, exams will be announced and administered, and the course material will be presented.

Not all material will be directly covered in lectures. Students are responsible for reading and understanding all material in assigned chapters, whether or not this material is explicitly treated in the lectures.

This Physics course is extremely fast paced and demanding. You will be learning new concepts every lecture and missing even one lecture can make you fall behind simply because the concepts build on the ones covered in earlier sessions. Hence, attendance to lectures and discussions are mandatory.

2. Discussions:

You must attend your discussion section and you must go to the section you have been assigned. Your TA will cover material (homework and exams) that may not be covered elsewhere. Please come prepared so you can ask questions, i.e. read the assigned chapter and work on the homework problems. Remember, the TA is there to explain things and give help when you are stuck, not to dole out answers.

In addition, there will be quizzes during most of the discussion sessions. Quizzes will be closed book, but all formulae will be provided for you. The quiz problems will be largely straightforward and are intended to check your competency in topics from recent homework assignments. **I will drop your lowest quiz score before computing your average**.

3. Homework Assignments:

Homework will be done through ***Expert TA***. You must submit your answers for the homework problems over the internet using the ***Expert TA*** web site.

You will need to purchase an ***Expert TA*** *account* in order to complete the required homework assignment. The codes can be purchased bundled with your textbook at the bookstore (or elsewhere) or can be obtained independently through the system website: *TheExpertTA.com*.

If you don't buy ***Expert TA*** access with your book, since it is synchronized with canvas, when you click on the first HW in canvas it will take you to *theexpertTA.com* and you will purchase the access code for the assignments. The first HW will not be actual questions from the course but it is for the purpose of making sure that you have access to the HW assignments and familiarize yourself with expert TA.

There are several advantages to electronic homework submission:

(1) You will know right away if your answer is right or wrong

(2) If you give a wrong answer, you can go back and try again to see if you can get the correct solution. You will be allowed 5 attempts for each question, so don't waste them. **For multiple choice or True/False questions, it will take points off for each wrong attempt. For other questions no point will be taken off for wrong attempts.**

Note that the software may randomize the numbers each time you make a new attempt on a problem, so be careful and remember that other students working on exactly the same problems are likely to have different numbers. The best way to do physics problems is first to work out carefully a general analytical solution to the problem and then plug in the numbers at the end. This is especially true if the numbers are being randomized each time so everyone has different numbers.

Why You Need to do the Homework: One of the main ways you can understand Physics is by doing the homework. Do not wait until the night before it's due to start working on your homework. The homework can be expected to be difficult and it counts a lot towards your final grade in enabling you to succeed on your exams. A sure way to get an F in this course is to not do the homework or not give yourself enough time to work on it. Late homework will incur a penalty. **For every day you are late you will incur 10% penalty.**

It is your responsibility to check elms.umd.edu frequently to make sure you do not miss any due date.

4. Exams

There will be three 50-minutes mid-term exams and a 2 Hr. Final exam. You must take the Final exam in order to pass the course.

All exams are closed book and closed note exams. For each exam, you may have one "cheat sheet" that contains physical constants and formulas. You may also have a calculator.

NO Exam will be dropped.

5. Grading:

The final grade will be based on the components with the following weights:

Mid-term exams: 3 x 15 %	= 45 %
Comprehensive Final Exam	= 25 %
Homework	= 20 %
Quizzes	= 10 %

At the end of the semester all the exam, quiz and homework grades will be added with the above weighting and a final letter grade will be assigned depending on the distribution of total scores. A histogram of total scores for the entire class will be plotted. Assuming that the distribution is reasonably bell-shaped, letter grades will be assigned so that students with scores in the top 20% will receive an A, the next lower 40% will receive a B, the next lower 25% will receive a C, and the remaining 15% will be split between D and F.

I will be guided by the University of Maryland grading policy, quoted below:

- A+, A, A- denotes excellent mastery of the subject and outstanding scholarship. (90-100)
- B+, B, B- denotes good mastery of the subject and good scholarship. (80-90)
- C+, C, C- denotes acceptable mastery of the subject and the usual achievement expected. (70-79)
- D+, D, D- denotes borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree. (60-70)
- F denotes failure to understand the subject and unsatisfactory performance. (< 60)

6. Excuses

Missing an exam is not allowed without a valid documented excuse as defined by the University (medical problem, religious holiday, or serious family crisis). In all cases, a makeup exam must be completed in a reasonable amount of time or you will receive a score of zero for the exam. The makeup test or assignment, and the due date, must be arranged by consulting with the Professor as soon as possible after it becomes apparent that an exam date will be missed.

There is NO makeup for missed Quiz. If you miss a quiz and you have a valid excuse supported by a document, you will be exempted from that quiz.

Turning in late homework is not encouraged as it will result in a reduction of 10% of the points for every day late. If you are going to miss an assignment because of a religious holiday, it is your responsibility to inform the instructor in advance so that suitable arrangements can be made.

7. Students with Disabilities:

Students with disabilities should meet with the instructor at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs.

8. Academic Integrity:

All students will be expected to comply with the University of Maryland's academic integrity policies, including the code of academic integrity and the honor pledge. Failure to comply will result in a failing grade and will be reported to the Honor Council.

9. University closure:

In the event of a University Closure the department will do its best to accommodate students by scheduling make-up sessions or revision of the lab schedule.

Phys 161 Schedule for Fall 2019 (subject to change)

	Date	Topics	Chap.Sect
Week 1	08/27	**Discussion of the syllabus, Introduction** Math, Units, Sig Figs	**1.1 – 1.6**
	08/29	Vectors	**1.7 – 1.10**
Week 2	09/03	Vectors	**1.7 – 1.10**
	09/05	Motion in a straight line	**2.1-2.3**
Week 3	09/10	Motion in a straight line	**2-4-2.6**
	09/12	2D Motion – Projectile Motion	**3.1-3.3**
Week 4	09/17	Circular Motion, Relative Motion	**3.4-3.5**
	09/19	**Exam 1**	**Ch 1 – 3**
Week 5	09/24	Newton's Laws of Motion	**4.1 – 4.6**
	09/26	Newton's 2nd law application	**5.1 - 5.3**
Week 6	10/01	Newton's 2nd law application	**5.4 - 5.5**
	10/03	Work and Kinetic Energy	**6.1-6.2**
Week 7	10/08	Work and Energy with Varying Forces, Power	**6.3 – 6.4**
	10/10	Gravitational, Elastic potential energy	**7.1 – 7.2**
Week 8	10/15	Conservative forces Force and potential energy, Energy diagrams	**7.3 – 7.5**
	10/17	**Exam 2**	**Ch 4 - 7**
Week 9	10/22	Impulse and Momentum	**8.1 – 8.2**
	10/24	Conservation of Momentum	**8.3 – 8.6**
Week 10	10/29	Rotational Kinematics	**9.1 – 9.3**
	10/31	Energy in Rotation, Moment of inertia	**9.4 – 9.6**
Week 11	11/05	Torque and Angular acceleration, Rotation about a moving axis	**10.1 – 10.3**
	11/07	Work and Power in rotation, conservation of angular momentum	**10.4 - 10.7**
Week 12	11/12	Equilibrium and Center of Gravity	**11.1 – 11.3**
	11/14	Stress, strain, and Elasticity	**11.4 – 11.5**
Week 13	**11/19**	**Exam 3**	**Ch 8 - 10**
	11/21	Law of Gravitation, Kepler's laws	12.1-12.5
Week 14	11/26	Law of Gravitation, Kepler's laws	**13.1-13.7**
	11/29	**NO CLASS - Thanksgiving**	
Week 15	12/03	Simple Harmonic Motion	**14.1 – 14.8**
	12/05	Simple Harmonic Motion	**14.1 – 14.8**
		FINAL - Thursday, December 12, 2019 6:30 – 8:30 PM	