Course Syllabus

Physics 260 MW 100 Sections Vibrations, Waves, Heat, Electricity & Magnetism

PHYS 260
Fall 2021

The Course will be taught in person.
If requested by the University, we may use the videoconferencing tool "Zoom" if necessary.
Please visit "umd.zoom.us" for more information.

An introduction to "zoom" for students is posted in the "files" area of ELMS for this course.

Learning Outcomes

This is the second semester course of a three semester calculus based general physics course. Topics covers include vibrations, waves, temperature and heat, kinetic theory and thermodynamics. electrostatics and electrical circuits

The course consists of 2 weekly lectures Monday and Wednesday at 4pm as well as a 50 minute discussion section conducted by a TA. There is also a lab for this course (Phys 261) which is scheduled and graded independently of Phys 260. However, you are expected to take both Phys 260 and Phys 261 in the same semester. When you registered for Phys 260 you also registered for one of the discussion sections. You are expected to attend this section regularly. You are expected to attend your assigned discussion sections. Quizzes will be scheduled during the lecture and you will post your solutions on ELMS.

Prerequisites:
Physics 161 and Math 141

Co-requisites:
Physics 261

Course Communications
Via ELMS

Lecture: Prof. Andris Skuja
Office Hours: Online by appointment

Prof. Andris Skuja
skuja@umd.edu

Class Meets
Mondays & Wednesdays at 4:30pm – 5:45pm

Lecture (all sections)
MW 4:30pm to 5:45pm
Toll Physics Building
Room 1412

Discussion Sections will be in class

TAs:
Emily Jiang (102, 105)
ejiang@umd.edu

Subhayan Saha (101, 104)
subhayan@terpmeil.umd.edu

Graders:
Siddharth Bhatnager
sbhatnag@umd.edu

Iyaniwura Abudu
iabudu@terpmail.umd.edu

Prerequisites:
Physics 161 and Math 141

Co-requisites:
Physics 261

Course Communications
Via ELMS

skuja@umd.edu

Discussion Sections:

Discussion Sections will be in person in assigned classroom

0101: Tu 11:00am - 11:50am (Toll Physics 405)
0102: W 10:00am - 10:50am (Toll Physics 405)
0103: W 9:00am - 9:50am (Toll Physics 405)
0105: F 3:00pm - 3:50pm (Toll Physics 405)

TAs:

Emily Jiang (102, 105)
ejiang@umd.edu

Subhayan Saha (101, 104)
subhayan@terpmeil.umd.edu

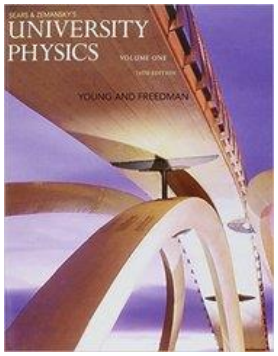
Graders:

Siddharth Bhatnager
sbhatnag@umd.edu

Iyaniwura Abudu
iabudu@terpmail.umd.edu

Required Resources & Textbook

Course website: **www.elms.umd.edu**



Sears and Zemansky's **University Physics**
Hugh D. Young and Roger A. Freedman
The 14th edition (2016).
ISBN 13: 978-0-321-97361-0 Pearson

A 15th edition is available, but we will continue to use the 14th edition. You should have already acquired this text for your first physics course of this sequence (Physics 161)

You will have to buy a ***theexpertta.com*** account to submit your homework
Purchase access to ***theexpertta*** via ELMS during or after first homework assignment

Calculator: You will need a scientific calculator with trig functions and exponential functions for homework, exams and quizzes without an internet connection. You may NOT use your phone or any other device with internet connections for exams and quizzes.

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

Activities, Learning Assessments, & Expectations for Students

- During class, I will present the course material through slides, video demonstrations and examples. The lectures, demonstrations, and discussions are all tools to present the material and help you learn.
- Students are strongly encouraged to read the relevant text prior to class and be prepared to participate and ask questions.
- You will be assessed based on homework, quizzes and exams.
    - **Quizzes** will be given without notice during the Lecture Period in class (but usually on Wednesdays) They are designed to motivate you to keep up with the reading and other course content. They will also be a valuable diagnostic indicating your weekly progress in the course. Quizzes will account for 20 % of your grade.
    - **Homework** will be assigned weekly. There is no better way to learn than through practice! The homework assignments will be assigned through ***theexpertta*** website via ELMS. You will have to purchase access to ***theexpertta*** website via ELMS. Homework will usually be due on Mondays.
    - There will be **three midterm exams and a final exam**. They will be closed book, but you will be asked to provide necessary constants and formulae. You are strongly encouraged to memorize the most crucial mathematical representation of the physics concepts you have learned.
    - I will drop your lowest quiz scores, your lowest homework scores and your lowest midterm exam score.
    - No late submissions will be accepted, and no makeups will be given for unexcused absences.

- If you know in advance that you will have an excused absence (i.e. a religious holiday), please notify me at least two weeks in advance to make arrangements to make up the work.

Course-Specific Policies

Homework Assignments:

Homework will be done using ***theexpertta*** problem sets. You must access your assigned homework problems via ELMS to reach ***theexpertta*** website. Do NOT go to ***theexpertta*** website directly but access it via ELMS. You will have to pay an additional charge for this access upon reaching the website.

Students who encounter problems with ***theexpertta*** should contact their support personnel

When you initially click on the first Homework assignment on ELMS , it will take you to ***theexperta.com*** and you will be able to purchase your access rights at that point. Note that ***theexpertta.com*** allows **two free introductory** access sessions but **no more than two.** Your score will be directly uploaded into ELMS.

Note that you have to purchase a **separate unique account** for each course each semester on ***theexpertta.com***

Get Some Help!

You are expected to take personal responsibility for you own learning. This includes acknowledging when your performance does not match your goals and doing something about it. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, visit http://www.counseling.umd.edu.

Remember that the key to really learning physics is to solve as many problems as possible and not necessarily only the ones assigned for homework or discussed in class. Physics involves new ideas that may not be part of your daily thinking. These ideas are formulated mathematically and you have to become familiar with these ideas and their mathematical representation and become comfortable with the culture of physics and its relevance to the scientific method. The mathematical representation is part of gaining an understanding of these ideas and the best way to familiarize yourself with doing so is to solve problems. You do not have to solve problems on your own. Discuss the ideas you have encountered and their mathematical representation with other students, with TAs and me.

Some suggestions to improve your understanding of the material and to gain confidence with the mathematical representation of physics concepts:

- ***Read about the topic to be covered in class in the textbook before the lecture***, so that you have some familiarity with the material. Doing so will help you stay focused in class.
- When solving problems, try to form a visual image of the problem and the physics concept under consideration before attempting to solve the problem mathematically. Don't guess at a solution. Draw a diagram, state or list the assumptions of the problem, invoke the physics concepts involved, list the mathematical representation of the concept and only then try to reach the desired conclusion. I will try to give you guidance to this procedure in class so that you can gain confidence to employ it.

- Try to solve as many as four or five extra relevant physics problems (from the textbook or the internet) every day in addition to the assigned homework problems.

Everything but individual tutoring is free because you have already paid for it, and **everyone needs help**… all you have to do is ask for it. If necessary, individual tutoring may be arranged through the Undergraduate Physics Office in the Toll Physics Building

Grades

Grades are not given, but earned. Your grade is determined by your performance on the learning assessments in the course. If earning a particular grade is important to you, please speak with me at the beginning of the semester so that I can offer some helpful suggestions for achieving your goal. I am here to help!

Homework scores and Quiz with will be posted on the ELMS page. Exams will be returned to you with clear marks. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet in my office.

Late work will not be accepted for course credit so please plan to have it submitted well before the scheduled deadline. I am happy to discuss any of your grades with you, and if a mistake has been made it will be corrected. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Learning Assessments	#	Category Weight
Quizzes: during lecture period or sections	**about 12**	**20%**
Homework: submitted on ELMS using ***theexpertta*** website	**about 12**	**20%**
Midterm Exams:	**3**	(2@ 15% each) **30%**
Final Exam	**1**	**30%**

A student **must take and pass the final exam to get a passing grade** in the course. If a student misses the final because of a University sanctioned excuse, accommodation will be made to take the exam at a later date.

Final letter grades are assigned based on the percentage of total assessed points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same as making the cut. It would be unethical to make exceptions for some and not others. Requests for special or additional work to change a grade will not be considered. Such a request is unfair to all the other students in the class.

In physics, it is often difficult to obtain grade distributions that match the nominal University expectations. The course grade distribution will follow roughly 20% A's, 40% B's, 30% C's, and 10% D's and F's. There is no need for any failing grades if all students work diligently. The percentage boundaries are somewhat fluid, and a higher percentage of A's or B's can easily be accommodated if deserved.

To obtain the nominal grade distribution one may have to curve the grades both for the average and the standard deviation. Students like a curving process that raises their grades but do not like one that lowers them. An unbiased curving process may do both. Consequently it is unlikely that grades will be curved.

The nominal University grade distribution is as follows.

Final Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%		
A	92.00%	B	82.00%	C	72.00%	D	62.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%		

Course Schedule

This schedule is approximate, we may move slower or faster, depending on the volume of class discussion. Please refer to ELMS for up to date announcements.

DATES	TOPICS COVERED
8/30	Course overview and Review of SHM (Chapter 14) Mechanical Waves (Chapter 15)
9/1 9/8	Mechanical Waves (Chapter 15)
9/8 9/13 9/15	Sound and Hearing (Chapter 16)
9/20 9/21	Temperature and Heat (Chapter 17) Thermal Properties of Matter (Chapter 18)
9/27	Review
9/29	**First Midterm EXAM**
10/4 10/6	Thermal Properties of Matter and Kinetic Theory (Chapter 18)
10/11 10/13	First Law of Thermodynamics (Chapter 19)
10/18 10/10	Second Law of Thermodynamics (Chapter 20)
10/25	Review
10/27	**Second Midterm EXAM**
11/3 11/5	Electric Charge, Coulomb Force & Electric Field (Chapter 21)
11/8 11/10	Gauss Law (Chapter 22) & Electric Potential (Chapter 23)
11/15 11/17	

	Electric Potential (Chapter 23) & Capacitance and Dielectrics (Chapter 24)
11/22	Resistance, EMF and Direct Current Circuits (Chapter 25)
11/24	**Thanksgiving Recess**
11/29	Review
12/1	**Third Midterm EXAM**
12/6 12/8	Direct Current Circuits Kirchoff's Laws and R-C Circuits (Chapter26)
12/13	Course Review

Final Exam Thursday, December 16 6:30pm – 8:30pm	Location TBA

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, may occur.