Course Syllabus

Physics 260 Vibrations, Waves, Heat, Electricity & Magnetism

PHYS 260
Spring 2020

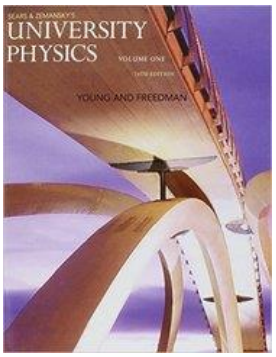
Learning Outcomes

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 discussion sections, if you are in the incorrect section or you miss a quizz, you will not get credit for it.

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 need a scientific calculator with trigonometry and exponential functions not connected to the internet to make calculations during quizzes and exams.

You will have to buy a ***theexpertta.com*** account to submit your homework

Prof. Andris Skuja
skuja@umd.edu

Class Meets
Mondays & Wednesdays
4:00-5:15pm
1412 Toll Physics Building

Office Hours
PSC 3103
Mon 2:30pm
and by appointment

Lecture (all sections)
MW 4:00pm to 5:15pm
1412 Toll Physics

Discussion Sections

Section 201 Tuesday
11:00am to 11:50am
ITV 1111

Section 203 Wednesday
9:00am to 9:50am
Toll Physics 0405

Section 205 Tuesday
4:00pm to 4:50pm
Toll Physics 1219

TA: Sanket Doshi
TA email:
sdoshi1@umd.edu

Prerequisites:
Physics 161 and
Math 141

Co-requisites:
Physics 261

Course

Communications
Via ELMS

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, demonstrations and examples. The lectures, demonstrations, and discussions are all tools to demonstrate 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 both during the Lecture Period in class and in Discussion Sections 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. This can be done via ELMS or by following the procedure outlined below.
    - There will be **three midterm exams and a final exam**. They will be closed book, but necessary constants and formulae will be provided. However, you are expected to memorize the most crucial mathematical representation of the physics concepts you have learned. A limited number of calculators will also be made available, if necessary.
    - 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

Use of computers, phones or tablets is strongly discouraged during our class meetings. I understand and have considered arguments for permitting laptop and tablet computers in the classroom. However, researchers have found that these distractions do in fact interfere with learning and active participation see: ***http://youtu.be/WwPaw3Fx5Hk.*** (Yes really, watch this video). For that reason, I ask that you do not use computers, tablets, and/or phones during class meetings (except when required for DSS accommodations).

Homework Assignments:

Homework will be done via ***theexpertta*** website . You must submit your homework answers for the assigned homework problems over the internet using ***theexpertta*** website.

You will have to purchase an account on ***theexpertta*** in order to complete the required homework assignments. The code access can be purchased from the bookstore along with your textbook or can be obtained independently through their website. If proceeding independently please access the listed URL's below corresponding to your discussion section for accessing ***theexpertta.***

PHYS 260	
Instructor:	Andris Skuja

Section	**Class Registration URL
0201	http://goeta.link/USH22MD-0BCB04-1WG
0203	http://goeta.link/USH22MD-AA1B00-1WE
0205	http://goeta.link/USH22MD-3E4CB6-1WC

If you do not buy access independently or with your book, 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.** If you access the homework problems directly from ELMS on ***theexpertta*** your score will be directly uploaded into ELMS. If you access your homework independently your score will remain at ***theexpertta*** site. Your score can still be downloaded after the fact by accessing any specific homework from ELMS even after the due date.

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, so I encourage you to consider visiting http://ter.ps/learn and schedule an appointment with an academic coach. If you just need someone to talk to, 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. You may also wish to contact members of the Physics Clinic in the first floor of the Toll Physics Building. The Physics Clinicians are eager to help.

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 I have made a mistake I will immediately correct it. 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 and in section (best 10 out of 12)	**about 12 each**	**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.

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%		

If the course grades match these elevated expectations I will use the University standard but the letter grade boundaries will probably be somewhat lower.

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
1/27 1/29	Course overview and Mechanical waves (Chapter 15)
2/3 2/5,	Sound and Hearing (Chapter 16)
2/10 2/12	Sound and Hearing (Chapter 16) & Temperature and Heat (Chapter 17)
2/17 2/19	Temperature and Heat (Chapter 17) and Thermal Properties of Matter (Chapter 18)
2/15 2/18	Thermal Properties of Matter (Chapter 18) (Kinetic Theory)
2/24	**First Midterm EXAM**
2/26	First Law of Thermodynamics (Chapter 19)
3/2 3/4	First Law of Thermodynamics (Chapter 19) Second Law of Thermodynamics (Chapter 20)
3/9 3/11	Second Law of Thermodynamics (Chapter 20)
3/16	**Spring Break**
3/25 3/29	Electric Charge and Electric Field (Chapter 21)
3/30 4/1	**Review and Second Midterm EXAM**
4/6 4/8	Gauss's Law (Chapter 22)
4/13 4/15	Capacitance and Dielectrics (Chapter 23)
4/20 4/22	Current, resistance and EMF (Chapter 24)
4/27	Direct Current Circuits (Chapter 25)
4/29	**Third Midterm EXAM**
5/4 5/6	Direct Current Circuits (Chapter 25)
5/11	**OVERVIEW & REVIEW** (last day of class)
Final Exam Friday, May 15	**6:30pm – 8:30pm** Location will be announced

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,