

## SYLLABUS FOR PHYS260, FALL 2018

### GENERAL PHYSICS: OSCILLATIONS, FLUIDS, WAVES, HEAT AND ELECTRICITY

LECTURES: Tu Th 3:30 – 4:45 pm in Physics 1410

#### PROFESSOR MICHELLE GIRVAN

Email: [girvan@umd.edu](mailto:girvan@umd.edu)

IMPORTANT: include “phys260” in the subject of all emails to Dr. Girvan, or contact via ELMS (preferred)

Phone: 301-405-1610

Office: A.V. Williams 3341

Office Hours: Tuesdays 11am-12pm, or by appointment

Course website: can be accessed via [elms.umd.edu](http://elms.umd.edu). *Announcements will be made through ELMS.*

#### OFFICIAL COURSE DESCRIPTION:

Second semester of a three-semester calculus-based general physics course. Vibrations, waves, fluids; heat, kinetic theory, and thermodynamics; electrostatics, circuits, and magnetism. PHYS260 and PHYS261 must be taken in the same semester.

#### MODIFICATION OF OFFICIAL COURSE DESCRIPTION:

The course will not cover fluids or magnetism. The course will review vibrations, necessary to understand waves, with the assumption that students already were introduced to the topic in PHYS161. This change is in response to complaints that there was too much material in PHYS260.

#### CO-REQUISITE:

MATH241 (Calculus III: Multivariable). If you do not understand math steps done in class or in the text, please ask TA's in discussion section or the instructor during office hours.

#### SECTIONS AND TAs:

Section	Time	Location	Instructor
501	F 9:00-9:50am	PHYS0405	Benjamin Moy
502	F 12:00-12:50pm	PHYS0405	Keshav Srinivasan
503	F 10:00-10:50am	PHYS1219	Keshav Srinivasan
504	W 10:00-10:50am	PHYS1219	Keshav Srinivasan

**Graduate TA Info:** Ben Moy, email: [srsmith@umd.edu](mailto:srsmith@umd.edu), office hours: TBA. Keshav Srinivasan, email: [keshavsr@umd.edu](mailto:keshavsr@umd.edu), office hours: TBA

**Undergraduate TA:** TBA

**WHOM TO CONTACT:** Please contact Prof. Girvan for questions about grading and scheduling. *The best way to reach her is via ELMS.* Please allow up to 2 business days for a response (response time will frequently be shorter). If you need a response sooner, send her an email at [girvan@umd.edu](mailto:girvan@umd.edu) with “IMPORTANT: PHYS260” in the subject line. For questions about the material, you are encouraged to contact the TAs or Prof. Girvan.

**REQUIRED TEXTBOOK AND MASTERING PHYSICS:** The required textbook for the course is: University Physics, with Modern Physics, 14th edition, with Mastering Physics, by Hugh D. Young and Roger A. Freedman (Pearson, 2015). This course will cover Chapters 14-24. However, it is likely that a few sections of the assigned chapters will be explicitly excluded; these will be announced, and you will then not be responsible for their contents. Many of you already have the textbook from PHYS161. If you do not, and assuming you plan to continue on to PHYS 270 (the third semester of the sequence), it makes most sense to buy the extended edition, with modern physics (ISBN 978-0-321-98258-2/0-321-98258- 4), which includes a Mastering Physics access code, which you will need. Note that for the book alone, the ISBN number is 978032197361/0321973615 and for Mastering Physics alone the ISBN number is 9780321997753/0321997751. You need a Mastering Physics access code so you can do the online homework. If you took PHYS161 in the last semester and have a Mastering Physics Access Code from then, you are all set: your Mastering Physics access code from PHYS161 is good for two years. However, if you are a transfer student, took PHYS 161 more than one year ago, or for some other reason do not have an access code, then you will

need to get one. Two options are: 1) Buy a used book, and buy the Mastering Physics access code at [www.masteringphysics.com](http://www.masteringphysics.com). 2) Buy textbook bundles with Mastering Physics directly from [www.mypearsonstore.com](http://www.mypearsonstore.com). Only one volume needs to be bundled with Mastering Physics; the others can be purchased unbundled. The access number is needed to get on-line access to the web-based homework collection system called Mastering Physics. Also, make sure you get the **14th edition!** Warning: you really do need to get the book and access code to pass the course.

**RECOMMENDED TEXTBOOKS:** There are many books that you may find helpful when Young and Freeman is not, including Physics for Scientists and Engineers, by Serway and Jewett, Physics by Paul A. Tipler, Worth and Fundamentals of Physics by David Halliday, Robert Resnick, and Jearl Walker. There are also many earlier editions of these and other calculus based physics textbooks printed in the last 10-20 years that contain much the same material and can be purchased quite inexpensively on the web or at local used book stores or found in the Engineering and Physical Sciences Library.

**LECTURES AND LECTURE NOTES:** Students are responsible for material that is discussed in lecture whether or not it is included in the textbook. A pdf file of the slides used in lectures will be posted on elms by Friday of that week (after the lectures). In order to encourage you to think through the material discussed during lecture, lecture notes will not be posted beforehand. The posted lecture notes will *not* cover all the material presented in lecture, since a large portion of the lecture will be done using the blackboard to augment the material in the slides. Thus, it is very important that you attend lecture.

**GRADES:** Your total numerical score for the course will be computed by summing your (curved) scores on the final exam, the midterms, the homework (electronic and written) and the lab with the following weight:

Final exam	30 %
Midterm exams	40 %
Quizzes	15 %
Homework	15 %

**IMPORTANT GRADING NOTES:**

- (1) **Final exam:** You must take the Final exam in order to pass the course.
- (2) **Curving:** The course is graded on a curve, with a B-/B average. Thus, there are more grades of C+ and below than there are of A- and above. This distribution is common in offerings of PHYS260 over the years. For the final course grades, this corresponds to about 25% As (including A+s and A-s), about 42% Bs (including B+s and B-s), and about 33% C+ and below. Depending on the distribution of scores, individual components like midterm exams may be curved before those scores are used in determining your composite component scores. In other words, each midterm will be curved separately and these curved scores will be used to determine which midterm is dropped (see below) and your composite midterm grade. When a component is curved, this will be announced in class and also posted on ELMS. *Beware of total scores generated by ELMS; they are misleading in many cases.*
- (3) **Dropped grades:** There will be three midterm exams, but the midterm exam component of your grade will be calculated by averaging only your two best curved scores. Similarly, your composite quiz grade will be calculated from your best 8 of 9 quizzes, and your online composite homework grade will be calculated from your best 9 or 10 assignments.
- (4) **Participation:** Lectures will include a number of questions that students will answer using clickers. To track participation, we record whether or not questions are answered, without regard to which answer is given. *While your participation scores are not directly factored into your grade, they may be taken into account when final grades are assigned for borderline cases.* Participation/attendance will also be recorded by the TAs for the discussion sections.

**EXAMS:** All quizzes and exams (including the final) will be closed book. You will be provided with a formula sheet that will be posted on ELMS before the exam. Note: You may need a calculator during the quizzes and exams, especially one with "scientific" capabilities, i.e., trig, log, exponential, roots, and powers. We reserve the right to clear all memories on your calculators at the start of any exam. For that reason it is best to use a simple inexpensive calculator for the exams. Calculators on mobile phones are strictly forbidden. Solutions to the exam questions will be posted. Sample exams from previous semesters will be made available for studying.

**QUIZZES:** Quizzes will be held in lecture. Approximately 15 minutes will be allocated for each quiz. If you are late, you will not get extra time. Tentative dates for quizzes are included in the tentative schedule. The date of each quiz will be confirmed during the preceding lecture, i.e., there will be no "surprise" quizzes. Each quiz will contain one or two

questions very similar to the Mastering Physics homework problems (see below for homework details) from the last assignment due before the quiz date. As such, they are designed to make sure that you understand the problems from the homework and are able to construct the solutions independently. No books or notes are allowed, but a list of formulas will be projected on the overhead screen during the quiz.

**HOMEWORK:** There will be nearly weekly homework assignments. These assignments will be done online using Mastering Physics. You will need a code (which comes with the book, as described above) to access the electronic homework.

**GETTING STARTED WITH MASTERING PHYSICS:** Instructions for logging onto Mastering Physics are located on a pamphlet included in your text and are listed below for your convenience.

1. Go to [www.masteringphysics.com](http://www.masteringphysics.com)
2. Next you will need to register. You need the following:
  - a. Access code (purchased with the textbook or alone, as described above)
  - b. Course ID: **MPGIRVAN73772**
  - c. Student ID (and User ID): your UMID number

For any technical problems please contact the mastering physics support team by email: [support@masteringphysics.com](mailto:support@masteringphysics.com)

**WHEN HOMEWORK IS ASSIGNED AND DUE:** Online homework will generally be assigned the week before it is due. You must submit your answers for the electronic homework problems over the internet. It is your responsibility to submit the homework on time.

**NOTE ABOUT ELECTRONIC HOMEWORK:** In the case of the electronic homework, note that the software will randomize the numbers for each student, so be careful and remember that other students working on exactly the same problems will have other numbers! The best way to do physics problems is to first work out a general formula for the answer and then plug in the numbers at the end. This is especially true if the numbers are being randomized 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 is supposed to be hard, and it counts a lot for your grade. A sure way to do poorly in this course is not doing the homework or not giving yourself enough time to work on it. In addition to doing the assigned problems, you should work through some unassigned problems, ideally in tandem with your study group. A key to success in this course is to do lots of problems.

**TUTORING:** The physics department has a free tutoring service: The Slawsky Clinic. It is located in room 1214 in the physics building. See <http://umdphysics.umd.edu/academics/tutoring-a-academic-support/93-slawskyclinic.html>.

**STUDENTS WITH DISABILITIES:** Accommodations will be provided to enable students with documented disabilities to participate fully in the course. Please discuss any needs with the instructor at the beginning of the semester so that appropriate arrangements can be made. Students who are registered with DSS, and who are planning to take examinations at DSS facilities, are required to give the instructor the pertinent authorization forms in editable electronic format at least two lectures (one week) prior to each exam date.

**ACADEMIC HONESTY:** Note that although you are encouraged to discuss homework and class material with other students, any work you submit must be your own and should reflect your own understanding. Academic dishonesty, such as cheating on an exam or copying homework, is a serious offense which may result in suspension or expulsion from the University. The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

**ABSENCES AND MAKEUPS:** As a policy, there will be no make-ups for lectures, quizzes and homework assignments, because students are already permitted to drop their lowest quiz and midterm exam grades and their lowest homework grades. Make-ups beyond this built-in leeway will only be possible under special extenuating circumstances. Appropriate documentation is required in these cases.

PHYS260 Tentative Schedule  
 Fall 2018, Prof. Girvan  
 Tu Th 3:30-4:45pm

Changes to midterm exam dates will be announced at least 1 week in advance. Changes to homework deadlines will be announced at least 1 week in advance if the due date is moved earlier than listed below. Changes to quiz dates will be made 1 at least one lecture in advance.

Date	Topic	Date	Topic
Tu 8/28/18	Ch 17	Th 8/30/18	Ch 17
Tu 9/4/18	Ch 18	Th 9/6/18	Ch 18; <u>HW1 due</u>
Tu 9/11/18	Ch 19; Quiz #1	Th 9/13/18	Ch 19; <u>HW2 due</u>
Tu 9/18/18	Ch 20; Quiz #2	Th 9/20/18	Ch 20;
Tu 9/25/18	Ch 14 & 15; <u>HW3 due</u>	Th 9/27/18	Ch 15; Quiz #3
Tu 10/2/18	<b>MIDTERM #1</b> (Ch. 17-20)	Th 10/4/18	Ch 15 & 16
Tu 10/9/18	Ch 21; <u>HW4 due</u>	Th 10/11/18	Ch 21; Quiz #4
Tu 10/16/18	Ch 22; <u>HW5 due</u>	Th 10/18/18	Ch 22; Quiz #5
Tu 10/23/18	Review; <u>HW6 due</u>	Th 10/25/18	Ch 23; Quiz #6
Tu 10/30/18	<b>MIDTERM #2</b> (Ch 14-16, 21-22)	Th 11/1/18	Ch 23
Tu 11/6/18	Ch 24; <u>HW7 due</u>	Th 11/8/18	Ch 24; Quiz #7
Tu 11/13/18	Ch 25; <u>HW8 due</u>	Th 11/15/18	Ch 25; Quiz #8
Tu 11/20/18	Ch 26; <u>HW9 due</u>	Th 11/22/18	Thanksgiving
Tu 11/27/18	Ch 26; Quiz #9	Th 11/29/18	Review; <u>HW10 due</u>
Tu 12/4/18	<b>MIDTERM #3</b> (Ch 23-26)	Th 12/7/18	Final Review
Tu 12/11/18	Study day	Fri 12/14/18	Final Exam: 6:30-8:30pm