

# PRINCIPLES OF PHYSICS FOR SCIENTISTS AND ENGINEERS I

Physics 1211    Tu & Th    Period 3    11:10–12:25pm    Room 202    Spring Semester 2022

PHYS 1211 is the first semester of a two semester course in introductory physics. It is a four credit hour course requiring a working knowledge of calculus, trigonometry, algebra, and geometry.

Instructor            Prof. Michael Geller  
Email: mgeller@uga.edu (*to reach me in an emergency*)

Need to contact me? Due to the large number of students in this class please respect the following course communication etiquette:

## Course Communication Etiquette

1. If you have a question about a homework problem, a homework or exam grade you received on Mastering Physics, please contact the Homework Assistant (see below) by email or ask them in person during the Tuesday office hour. If this does not resolve the problem please see me during my Thursday office hour.
2. If you have a question about the course organization, schedule, coverage, grading policy, or about your final course score and grade, please contact the Course Assistant (see below). If this does not resolve the problem please see me during my Thursday office hour, or, after the semester is completed, contact me by email.
3. After reading this syllabus, if you still have a question or need assistance please come to my Thursday office hour.
4. It is never OK to ask me anything about the exams (composition, coverage, advice for preparation) by email or in a one-on-one setting. I am always happy to answer such questions in the open discussion session on Thursdays, but never privately.

## First week schedule

We will not have any in-person meetings the first week. However you do have reading and homework assignments. *Teaching assistants have not yet been assigned for this course. The syllabus will be updated to include their contact information when that becomes available.*

Homework Assistant            *To be announced*  
Email: *To be announced*  
Tuesday office hour 11:10–12:25 pm in Room 202  
Please contact the Homework Assistant for help with:  
Homework  
Mastering Physics homework grades  
Mastering Physics exam grades  
Extended exam times for DRC students

Course Assistant            *To be announced*  
Email: *To be announced*  
Please contact the Course Assistant for help with:  
Course organization, schedule, or grading policy  
Course coverage  
Final course score and grade  
Learning more about a demo

## Flipped Course Format

Welcome to PHYS 1211! Flipping is a modern pedagogical approach in which a first level of understanding is done outside of class through individual, self-paced reading and interactive videos. Class time is then used to refine that understanding through in-person lectures on more advanced and difficult topics, demonstrations, and group learning. It may require a bit more time, but many students prefer it because much of the learning is self-paced. I also like it because it is supposed to be beneficial for busy and/or struggling students, who may miss class due to circumstances beyond their control. Because the core content is available asynchronously online, we should also be somewhat robust to pandemic-related changes.

Here's how it works: Every week students will be responsible for reading sections of the textbook and for viewing a collection of instructional materials prior to an in-person discussion session on Thursday during our scheduled meeting time. To do well in the course you should do the reading and watch the videos on Monday, Tuesday, and Wednesday. There will be an optional in-person office hour on Tuesday during our scheduled class time where students can get homework help from the Homework Assistant and also work together in study groups. Our Thursday meetings will usually begin with an in-class physics demonstration, followed by a discussion led by me. A typical discussion will begin with my review of an advanced topic, followed by an example and quiz (graded but not counted in course score). I will also open the floor to general questions about the course or subject matter, and hold a short office hour for one-on-one questions. Thursday discussion session attendance is recommended but not required. Discussions will not be streamed or recorded. On exam days there will be no Thursday demos or discussion sessions, but room 202 will be proctored and available for you to use to take the online exams (this is optional, see below for more information).

You must also be registered for one of the laboratory sections which will meet once a week for two hours. The laboratory is required. Teaching assistants will be assigned to be your lab instructors. They will assign you a laboratory grade at the end of the semester. I will include that grade in your overall grade for the course. Questions about the laboratory exercises should be directed to your lab instructor.

Please see the FAQ sheet at the end of the syllabus for additional information.

Course Websites [mlm.pearson.com/northamerica/masteringphysics](http://mlm.pearson.com/northamerica/masteringphysics) (Mastering Physics)  
[uga.view.usg.edu](http://uga.view.usg.edu) (eLC)

We will mainly use Mastering Physics. eLC is only used for announcements. You will need a Mastering Physics license to access that content. Our Mastering Physics Course ID is geller37023.

## Required Course Materials

*Physics for Scientists and Engineers* (4th edition), by R. D. Knight (Pearson). Earlier editions are also acceptable. You must have a Mastering Physics license for this course. The Mastering Physics license includes access to an electronic version of the textbook which you can use instead of a hardcopy.

Scientific calculator.

Laptop or tablet computer for homework and exams.

## Reading

Reading is assigned below in the schedule

## Homework

Homework will be assigned on the Mastering Physics website for this course. The homework will be very similar to the exam questions. The difference is that you will get more time and multiple attempts to do the homework, and it counts for less.

## Exams

There will be five exams total (including the final exam) all with equal weight. The purpose of so many exams is to give you a real-time picture of your course grade and opportunity to correct early mishaps, hopefully reducing stress so you can learn more. The three highest scores will be used to determine your course grade, and the remaining two will be dropped. All exams will be administered online through the Mastering Physics website for this course. Exams are open book and open notes. Calculators are required. Equation sheets are not provided. Texting or the use of cell phones or internet searching during exams is prohibited and considered cheating. There will no make-up exams given: If you miss an exam it will count as one of your dropped exams, regardless of whether or not the absence is excused and approved by the university. Exam dates are given in the course schedule. Each exam covers specific material as stated in the schedule. There is no separate final exam in this course.

Exams will take place for 1 hour (11:20-12:20EST) on specified Thursdays during our assigned class period. You do not have to come to class to take the exams. For example, you can take them at home or anywhere with internet access *as long as you separate yourself from other 1211 students*. You may also take the exams in our regular meeting location using on-campus internet; these will be proctored.

## Grading

Your final grade will be determined according to:

Exams (best 3 out of 5)	80%
Homework	5%
Lab grade	15%

The grading scale is as follows (points rounded to the nearest integer):

A	89 - 100%
A-	86 - 88%
B+	83 - 85%
B	79 - 82%
B-	76 - 78%
C+	73 - 75%
C	69 - 72%
C-	66 - 68%
D	50- 65%
F	0 - 49%

## Academic Honesty

All academic work must meet the standards contained in the document *A Culture of Honesty*, available at <https://honesty.uga.edu>. Every student is responsible for knowing and understanding this policy. If you have any questions concerning this you are obligated to ask me for clarification. Anyone caught cheating will be reported to the university and will receive an F for the course.

### Course schedule

<b>Week</b>	<b>Office hour</b>	<b>Discussion</b>	<b>Reading</b>	<b>Videos</b>	<b>HW</b>
1	None	None	1.1-1.8	Video 1a	HW 1a
2	Tu Jan 18	Th Jan 20	2.1-2.6	Video 1b	HW 1b
3	Tu Jan 25	None (Exam 1)			
4	Tu Feb 1	Th Feb 3	3.1-3.4, 4.1-4.5	Video 2a	HW 2a
5	Tu Feb 8	Th Feb 10	5.1-5.7, 6.1-6.5	Video 2b	HW 2b
6	Tu Feb 15	None (Exam 2)			
7	Tu Feb 22	Th Feb 24	7.1-7.4, 8.1-8.4	Video 3a	HW 3a
8	Tu Mar 1	Th Mar 3	9.1-9.6, 10.1-10.8	Video 3b	HW 3b
9	Tu Mar 15	None (Exam 3)			
10	Tu Mar 22	Th Mar 24	11.1-11.3, 12.1-12.7	Video 4a	HW 4a
11	Tu Mar 29	Th Mar 31	13.1-13.13.6, 15.1-15.15.6	Video 4b	HW 4b
12	Tu Apr 5	None (Exam 4)			
13	Tu Apr 12	Th Apr 14	16.1-16.3, 17.1-17.4	Video 5a	HW 5a
14	Tu Apr 19	Th Apr 21	18.1-18.6, 19.1-19.4	Video 5b	HW 5b
15	Tu Apr 26	None (Exam 5)			

### Exam schedule

<b>Exam</b>	<b>Date</b>	<b>Time</b>	<b>Coverage</b>	<b>Where</b>
1	Th Jan 27	11:20-12:20	1.1-1.8, 2.1-2.6	Online
2	Th Feb 17	11:20-12:20	3.1-3.4, 4.1-4.5, 5.1-5.7, 6.1-6.5	Online
3	Th Mar 17	11:20-12:20	7.1-7.4, 8.1-8.4, 9.1-9.6, 10.1-10.8	Online
4	Th Apr 7	11:20-12:20	11.1-11.3, 12.1-12.7, 13.1-13.6, 15.1-15.6	Online
5	Th Apr 28	11:20-12:20	16.1-16.3, 17.1-17.4, 18.1-18.6, 19.1-19.4	Online

### Frequently asked questions

#### Course Enrollment

*I really need to take this class. Can I be added to a full section?*

Unfortunately we cannot override the enrollment limits for a section, because lecture course enrollment is determined by the number of lab sections we can offer. In turn, the lab limits are set by how many students the rooms can accommodate. The only thing you can do is keep an eye on Athena to see if a seat opens up.

#### COVID-19

*I've tested positive for COVID, is there an online option?*

No. According to current UGA policy all courses are to be given in-person. A student who tests positive for COVID must quarantine for 5 days and must be treated like any sick student pre-pandemic. Faculty have been instructed not to Zoom courses, which might encourage some students to take the course remotely.

#### Class Format

*Is attendance required or taken?*

No.

*What do we do on Tuesdays?*

The Homework Assistant will have an office hour (in Room 202). In addition, students are encouraged to use this time to study in groups. Attendance is optional.

*What do we do on Thursdays?*

Our Thursday meetings will usually begin with an in-class physics demonstration, followed by a discussion of that demonstration or another topic or both. Opportunities for self-assessment (graded but not counted) will be provided. There will also be an opportunity for one-on-one communication with the instructor. Thursday discussion session attendance is highly recommended but not required. Discussions will not be streamed or recorded. On exam days there will be no Thursday demos or discussion sessions, but room 202 will be proctored and available for you to use to take the online exams.

*Is this course hard?*

PHYS 1211 is definitely one of the harder courses on campus at this level. This is partly why it is useful: Doing well in PHYS 1211 means that you can figure out quite high level and mathematically sophisticated scientific material.

## Exams

*What will each exam cover?*

This is explained in the exam schedule.

*Are the exams cumulative?*

Physics by nature is cumulative. However the intention will always be to focus on selected book chapters. This also applies to the last exam, which will be focused on content from the final weeks of the course.

*How should I best prepare for exams?*

It is very important to carefully read the textbook, which is your primary source of information. Then make sure to understand the homework, videos, and any example problems we solve in class.

*What is the style of the exams?*

A mix of conceptual and multiple choice questions.

*My internet is unreliable, can I have extra time to do the exams?*

No, in that case you should take your exams in Room 202.

*How will my DRC accommodations be implemented?*

If you are granted extra time this will be implemented by the Mastering Physics software. The DRC is very reliable at communicating with instructors to plan for accommodations. However you are always welcome to email the Homework Assistant to confirm that we have received your DRC approval.

## Homework

*When is homework assigned?*

This is done on the Mastering Physics website for our course.

*Can we access the homework solutions?*

Yes, the solutions are provided by Mastering Physics.

## Textbook

*There are different versions and ISBN numbers of the textbook. Which one do I need?*

Any version of the 4th edition of the textbook is fine. Earlier editions can also be used.

*Can I use an electronic copy of the textbook?*

Yes.

*What chapters will we cover?*

We will cover chapters 1-18 (skipping 14) as detailed in the schedule.

## Labs

*When do labs start?*

The labs begin the week of January 24-28. Please read through the online lab syllabus and the first experiment before the first lab.

*Are the labs synched to the lectures?*

We try to do that as much as possible.

*Who is my lab instructor?*

They are not assigned until after classes begin.

*Where can I find the lab syllabus?*

<https://www.physast.uga.edu/courses>.

*Who do I contact with additional questions about the lab?*

You will need to wait until the lab instructors are assigned and ask them because the labs are run separately from the lectures.

## Extra Credit

*Can I earn some extra credit?*

No.

## Repeating PHYS 1211

*I am repeating this course for a better grade but I am happy with my lab grade. Do I have to repeat the lab too?*

In this case you do not have to *attend* the lab. But you do have to remain registered for the lab. If this applies to you, please contact Tom Barnello, the Lab Coordinator (tjbar@uga.edu) before the end of the drop/add period so that your seat may be made available to another student. If you would like to improve your lab grade as well, you must attend the lab and do all of the lab exercises again and take another lab final.

## Instructor

*What is your background?*

I grew up in California and got my PhD in Physics from the University of California, Santa Barbara, in 1994. My thesis was on theoretical condensed matter physics. I joined UGA in 1997 as an assistant professor. I'm married with two daughters.

*What is your research area?*

I study quantum computers. You can find more info at [www.physast.uga.edu/people](http://www.physast.uga.edu/people).

## Research

*I've heard that you work with quantum computers, can I learn more about that?*

Yes, talk to me after class and I'd be happy to set up an appointment to talk about quantum computers.