INTRODUCTORY PHYSICS FOR SCIENTISTS AND ENGINEERS

Physics 1212  Tu & Th  Period 3  11:10–12:25pm  Room 202  Spring Semester 2021

PHYS 1212 is the second 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
Office: Room 251 Physics Building
Office hours: By appointment
Email: mgeller@uga.edu

Please contact the course assistant for questions about your grades or to view an exam.

Course Assistant  To be assigned
Office hours: By appointment
Email:

Course Website  https://uga.view.usg.edu  (ELC website)

Course Format

This course consists of two online pre-recorded lectures, one in-person 30 minute discussion session on Thursday, and one laboratory assignment per week. Each week an announcement will be posted on the ELC course website discussing the reading, lectures, and homework assignments for the week. Every Thursday we will meet in person in Room 202 of the Physics Building (during our scheduled class time) to discuss the week’s material. To get the most out of the discussion session, the lectures should be viewed before our meeting.

The 30 minute discussion sections will address student questions, homework, and exam preparation. Attendance is recommended but not required. Discussions will not be streamed or recorded. To meet safe distancing requirements the class period will be divided into two separate 30 minute discussions: Students with last names beginning with A-K meet 11:10-11:40. Students with last names beginning with L-Z meet 11:50-12:20. You must wear a mask to these meetings.

You must also be registered for one of the laboratory sections which will meet once a week for two hours. The laboratory is required. Graduate 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.

Required Course Materials

Physics for Scientists and Engineers (4th edition), by R. D. Knight (Pearson). Earlier editions are also acceptable. You do not need a Mastering Physics license for this course.

Scientific calculator.
Homework
Homework will be assigned but not collected or graded.

Exams
There will be two in-class midterm exams and a cumulative final exam. The best midterm score will be used to determine your course grade, and the remaining one will be dropped. All midterm exams will be closed book and closed note, but equation sheets will be provided. Additional sheets of paper are not allowed during the exams, including the final. Calculators (including graphing calculators) are allowed, but the use of laptop or other computers is forbidden. Texting or the use of cell phones during exams is considered cheating. There will no make-up exams given: If you miss a midterm exam it will count as your dropped exam, regardless of whether or not the absence is excused and approved by the university. Exams are property of the Department of Physics and Astronomy and are not returned; however the course assistant will let you view your graded exam.

To meet safe distancing requirements the exams will be divided into two groups. Students with last names beginning with A-K will have midterm 1 on Tuesday February 16. Students with last names beginning with L-Z will have midterm 1 on Thursday February 18. A-K will have midterm 2 on Tuesday March 23. L-Z will have midterm 2 on Thursday March 25.

The final exam will be on Thursday May 6 in our regular classroom. Students with last names beginning with A-K will take their exam 3:30-4:45pm. L-Z will take their exam 5:15-6:30pm.

Grading
Your final grade will be determined according to:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best of two midterm exams</td>
<td>45%</td>
</tr>
<tr>
<td>Lab grade</td>
<td>15%</td>
</tr>
<tr>
<td>Final exam</td>
<td>40%</td>
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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%

General Information
This syllabus is a general plan for the course and deviations may be necessary. You are responsible for attending every lecture. Each student is responsible for the material discussed in class and the announcements made in class. Absence from class does not relieve one of this responsibility.

If you are retaking the course and are happy with the final lab grade you received previously, you do not have to attend the lab. You do have to remain registered for the lab, but you do not have to attend. 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, you must attend the lab and do all of the lab exercises again and take another lab final.

**Academic Honesty**

All academic work must meet the standards contained in the document *A Culture of Honesty*, available at [https://honesty.uga.edu](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.

**When do labs start?**

The labs begin the week of January 25-29. Please read through the online lab syllabus and the first experiment before the first lab.

**FAQ**

**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 how many 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.

**Class Format**

*Can I take this course fully online?*

No. However if you want to minimize your in-person exposure, you can skip the discussion sessions and only come to class for the exams.

*Is attendance required or taken?*

No.

*Where do I find the pre-recorded lectures?*

The link is: [https://www.physast.uga.edu/classes/phys1212/geller/media/index](https://www.physast.uga.edu/classes/phys1212/geller/media/index)

You will need to login with your UGA MyID to view this content.

*What is the course assistant for?*

The course assistant should be your first point of contact for questions about your grades. They keep the official gradebook for the course and post your exam grades on ELC. They will also keep your graded exams for viewing.

*Who is the course assistant?*

That will be announced on ELC after they are assigned.
What are the A-K and L-Z groups?
For safe distancing the students are divided into these two groups based on the first letter of their last name.

Can I come to the other group’s discussion?
Yes, if there is room. Please email me if you would like to do that.

Can I come to the other group’s exam?
No.

What do we do on Tuesdays?
Usually Tuesdays are reserved for individual student meetings, available by appointment. We use some Tuesdays for exams as well.

Is this course hard?
PHYS 1212 is definitely one of the hardest courses on campus at this level. This is why it is useful: doing well in PHYS 1212 means that you can figure out pretty high level and mathematically sophisticated scientific material.

Do we have to come to the discussion sessions?
No.

What will be covered in the discussion sessions?
There is no specific agenda or format. The objective is to support student learning by reexplaining topics covered in the lectures, or discussing homework problems. If there are no student questions I will solve example problems.

Exams

What will each exam cover?
This will be announced on ELC prior to each exam.

What will be included on the equation sheets?
We will use one master equation sheet throughout the course, including the final. However it will be updated as the course progresses and posted before each exam. You are not permitted to bring any books or papers with you to the exams; the equation sheets will be provided in the exams themselves.

Are the exams cumulative?
Physics by nature is cumulative. You are even required to know topics from your previous physics course (such as Phys 1211) here. However the intention will always be to focus on selected book chapters. This also applies to the final exam, which will be focused on content from the final third of the course.

How should I best prepare for exams?
In order of priority, the first thing to do is to thoroughly understand the homework problems. My advice is to solve each problem once with the help of the textbook, and then close the book and solve each problem again from scratch using only the equation sheet (thus simulating an exam). The next most important thing is to understand everything covered in the lectures, especially the example problems solved there. If you still have time, then reread the covered book chapters before each exam.

Are the exams returned?
No. PHYS 1212 exams are property of the Department of Physics and Astronomy and are not returned to students. However graded exams may be viewed by appointment with the course assistant.

**Why can’t we have our exams?**

This it to help insure fairness for future PHYS 1212 courses, where some students may have access to previous exams.

**Is exam content reused?**

No. But knowing even the style and difficulty of an instructor’s exams confers an advantage.

**Are the A-K and L-Z exams different?**

Yes.

**What is the style of the exams?**

Usually a mix of multiple choice, conceptual, free-response questions.

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**Homework**

**When is homework assigned?**

Homework will be assigned on ELC as the course proceeds, but not every week.

**Can we access the homework solutions?**

No, but I am happy to discuss specific homework problems in the discussion sessions.

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**Labs**

**Are the labs synched to the lectures?**

We try to do that as much as possible, but the labs do not follow the order of the textbook, which makes this difficult.

**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](https://www.physast.uga.edu/courses)

**What is the format of the labs?**

The labs will begin the week of January 25. The first lab will be online for all students and will include diagnostic tests. The first in-person labs will begin the week after that with half of the students in a lab section attending in person while the other half does the experiment online, and then those roles are reversed for the next experiment. The goal this semester is to have the students do half of all the experiments in person, but of course, we will adjust to the Covid conditions accordingly.

**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.

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Extra Credit
Can I earn some extra credit?
No. In the past I have sometimes offered extra credit to the entire course for completing a physics education survey. This would be announced on ELC and would be offered to every student. Please do not contact me with individual requests for extra credit.

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 kids and two horses.

What is your research area?
I study quantum computers. You can find some of my papers here:
https://www.physast.uga.edu/people

Research

I’ve heard that you work with quantum computers, can I learn more about them?
Email me and I’d be happy to set up an office hour appointment to talk about quantum computers.

Can I do an undergraduate research project on quantum computers under your direction?
I’d be happy to discuss that.