

Physics 1420: Introductory Physics I (Spring 2022)

Kent Yagi

1 Basics

Instructor: Kent Yagi
Office: Physics 318
Lectures: 9:00–9:50am Mondays & Wednesdays & Fridays, Nau Hall 211
Office hours: Mondays 3–4pm
 Tuesdays 3–4:30pm
 (You are welcome to ask me questions via email at any time.)
Phone: 982-2329
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Grader: Sid Ajith (sa4fb@virginia.edu)

Class Web Page: UVA Collab *22Sp PHYS 1420*

2 Course Objectives

This course covers basics of mechanics and thermodynamics, using some algebra and calculus, such as trig calculations and derivatives. You will learn how Universe works and how we can understand physics of motion and heat by applying fundamental laws. These will prepare you to take more advanced physics courses in the future. You will establish skills to analyze problems, come up with a strategy, apply learned knowledge and solve the problem. Such skills will be useful not only for studying physics but for our life in general whenever we face challenges.

3 Textbooks

I will be using the following:

- Douglas C. Giancoli, *Physics for Scientists & Engineers with Modern Physics* (**5th edition**)

This course will take part in a new **Inclusive Access program** with The UVA Bookstore providing the course material at a low price.

You will have immediate access to the digital course materials for the first 2 weeks of class — for free. You can access your e-book through **Mastering Physics**, which is a web-based

learning interface. **After February 2**, your account will be charged **\$75.28**. You will receive an email from UVA Inclusive Access with detailed information about accessing the materials, costs, and opting out. Follow also the instruction [here](#) (on the Collab Resources) to register for Mastering Physics using the access code that you should receive from the UVA Inclusive Access. This program is optional but you **must actively opt out by the deadline to not be charged**. Additionally, you will lose access to your materials. Due to the special pricing, no refunds can be processed. This program aims to offer all students accessibility and affordability. If you have any questions regarding the program, please email UVAInclusiveAccess@virginia.edu.

4 Office Hours

Office hours will be held on Mondays and Tuesdays at 3–4pm in my office (Physics 318). If you'd like to come, please sign up [here](#). Each slot is 15 mins with max two students in the same slot.

5 Grade weighting

Grade will be determined with the following weighting and the final letter grade will be determined **on curves**:

- 10% Reading Assignment
- 20% Mastering Physics Homework (+ quizzes)
- 20% Written Homework
- 10% Midterm exam (I)
- 10% Midterm exam (II)
- 30% Final exam

6 Reading Assignments

At the end of each lecture, a reading assignment is given due before the next lecture. The assignment consists of **reading relevant sections of Giancoli and answer a few questions on Mastering Physics**. Regarding the former, **no need to read the parts with “*” in the textbook unless stated otherwise**. Regarding the latter, grading policies (such as how many attempts you can make to answer a question, what amount of reduction in score you receive for each incorrect answer, penalty for late submission, etc.) can be checked on Mastering Physics. Note that the policies for pre-class assignments and homework are different.

7 Lectures and Attendance

There is no strict attendance policy, though missing in-person classes may cause loss of learning. For example, I will show some demos and sometimes provide alternative solutions to those in the textbook. You are responsible for the material presented in class, turning in

your homework on time (which you can also turn in online), knowing problem assignments, and knowing any administrative announcements made, such as changes to the syllabus or changes to the scheduling of homework or exams.

I may host quizzes during some of the lectures (to be determined). I will provide a separate announcement beforehand if I decide to do so. Quiz scores will be included in the Mastering Physics HW (see below).

Given that the default teaching mode this semester is in-person, I generally do not plan to livestream the lectures on Zoom nor record the lectures. Having said this, I understand that sometimes you may have difficulty attending classes in person. If you let me know in advance with good reasons for not being able to attend in-person lectures (e.g. illness, university-related travel, etc.), I'd be happy to set up Zoom links so that you can attend lectures remotely. (See also the Health Policies mentioned in Sec. 11.)

8 Homework

There are two types of Homework: (i) Mastering Physics HW and (ii) Written HW.

Mid-term and final exams will contain problems that are very similar to homework problems, so take the latter seriously and make sure that you can solve them on your own.

Your credit will be reduced by 2% over each hour late submission (e.g. 24-hour late submission is a 48% reduction).

8.1 Mastering Physics HW

I will assign Mastering Physics HW on most Wednesdays, starting from Jan. 19. Each assignment is due the following Wednesday. You can check grading policies on Mastering Physics (which are different from those for pre-class reading assignments).

The first half of Mastering Physics HW consists of tutorial questions (problems without problem numbers) which contain ample hints and their solutions are self explanatory. The second half consists of end-of-chapter problems (problems with problem numbers) with no available hints. Since Mastering Physics only provides final answers, I'll provide step-by-step solutions for end-of-chapter problems in Resources under the Collab course website. (HW0 to be assigned on the first day of class will only have tutorial questions.)

If you answer the course evaluation towards the end of the semester, your lowest Mastering Physics HW will be dropped.

8.2 Written HW

On top of Mastering Physics HW, I will assign written HW on Wednesdays, starting from Jan. 26. Problems will be uploaded under "Assignments" in Collab website. You may submit your answers either by bringing them to the classroom or submitting them electronically through "Assignments" in Collab. Solutions will be uploaded under "Resources" in the same website.

Discussing the problems with each other is encouraged, but I expect each individual to write up their own solutions without direct copying. Copying another person's solution that you did not substantially participate in is unacceptable. The primary purpose of assigning these problems is for you to **struggle and learn**. Also, don't just write down answers, **show derivations!**

In a limited number of occasions, you may ask for an extension of due dates **in advance** provided you have good reasons to do so.

9 Exams

Exams to be held in the normal classroom.

- Midterm (I): Wednesday, February 23, 9:00 a.m. – 9:50 a.m.
- Midterm (II): Wednesday, March 30, 9:00 a.m. – 9:50 a.m.
- Final: Thursday, May 12, 2:00 p.m. – 5:00 p.m.

10 Schedule

The tentative schedule of the course (both lectures and assignments) can be found [here](#) on Google Sheet. The schedule will be updated as we go. *Some of the lectures (indicated on the spreadsheet) will be delivered online through Zoom (links to be provided later) as I'll be out of town on those dates.*

11 Special Accommodations

The [Student Disability Access Center \(SDAC\)](#) is available for you if you have any disabilities. Please work with them to discuss a range of options and how to request official accommodations.

Due to the pandemic situation, I will make special accommodations related to health issues. Health policies for this course can be found [here](#).