

PHY 131.01 – Classical Physics for Scientists and Engineers I

Fall 2024

General Course Information and Policies

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Course Description (from the *Undergraduate Course Bulletin*)

First part of a two-semester physics sequence for physical-sciences or engineering majors who have a strong mathematics background and are ready for a fast learning pace. It covers mechanics, wave motion, kinetic theory, and thermodynamics. Calculus is used concurrently with its development in MAT 131. Three lecture hours and one recitation hour per week. The Laboratory component, PHY 133 (Lab 1), could be taken concurrently. Not for credit in addition to PHY 121, PHY 125, or PHY 141. Advanced Placement Physics or a very strong course in high school Physics is recommended. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: MAT 123 or level 5 on the mathematics placement examination

Corequisite: MAT 125 or MAT 131 or MAT 141 or AMS 151

DEC: E SBC: SNW 3 credits

The *Bulletin's* description, it must be stressed, is very accurate and no exaggeration: this course will indeed have a fast pace, will require strong mathematical skills, and will cover a substantial amount of often challenging material. A successful outcome requires self-motivation, a serious level of commitment on your part, and a sustained, dedicated effort throughout the semester.

Learning Objectives

Upon completion of the course students will have acquired a solid quantitative understanding of the fundamental principles and concepts of Classical Mechanics, Waves, Fluids and Thermodynamics — and will have accumulated a significant amount of experience in applying these principles and concepts to describe in mathematical terms a range of physical phenomena from these fields, and in solving the resulting equations using elements of algebra, trigonometry and single-variable calculus.

Instructor: Radu Ionaş

- Email: radu.ionas@stonybrook.edu. Reserved for personal issues; questions about the material covered in class and the homework will be addressed during office hours. Specify in the subject line the course number, PHY 131. Allow between 24–48 hours for a reply. **Recitation-related inquiries should be addressed directly to your recitation instructor.**
- Office hours: MWF 9:20–10:20 am, right after the lecture, outside the lecture room.

UGTA office hours

Leo Lin — Mon Tue Thu Fri 1:00–2:00 pm (Physics Help Room, Physics A-129).

Rachel Ly — Mon Wed 9:20–10:20 am (Frey Hall corridor) and 12:00–1:30 pm (Physics Help Room, Physics A-129).

In addition to holding office hours, Leo and Rachel will also moderate a GroupMe chat, for which you can sign up [here](#).

Lectures

MWF 8:25–9:20 am, Frey Hall 102. The lectures will be live-streamed online and recorded. Attendance is not mandatory, although strongly recommended.

Course Administration

The course will be administered through [Brightspace](#). Important course announcements will be posted in the *Announcements* section, or broadcast via class email. Lecture slides and various other course materials will be posted regularly in the *Course Documents* module. Video captures of the lectures will be available in the *Video Streaming & Recordings* module.

Required Materials

1. A subscription (Student Access Code) to Pearson | Mastering Physics to complete online homework assignments. To purchase a subscription and/or register for our Mastering Physics course go to the course home folder in Brightspace, select the Mastering Physics module, then the Pearson link, and follow the instructions there. (You can also purchase the subscription directly from the Pearson website, but **you must register for the course via Brightspace**. If, in particular, you are being asked for a course ID, that is usually a sign that you have not done that.) Before proceeding with this please read the important information collected under the heading *Mastering Physics FAQ & Troubleshooting* at the end of this document. Regular homework assignment will begin on the first day of the course, and **it is imperative that you set this up in a timely manner**.
2. A [scientific calculator](#). This should have: addition, subtraction, multiplication, division, inverse power, trigonometric, inverse trigonometric and logarithmic functions.

Textbook

The recommended (as in “suggested but not required”) textbook for the course is

Douglas C. Giancoli, *Physics for Scientists and Engineers*, 4th or 5th ed. (ISBN-13: 9780137488179)

We estimate to cover to various degrees chapters 1 (Introduction, Measurement, Estimating) through 20 (Second Law of Thermodynamics). Pearson offers the option of purchasing an integrated digital textbook, but this is not required; if you obtain a copy by other means, that should do as well.

Help Resources

- The office hours of the course instructor, teaching assistants (listed above) and your recitation instructor (contact them directly for time & location).
- Free tutoring services offered by the university:

- *The Physics Help Room* — Physics Building, room A-129, Mon – Fri 9:00 am – 6:00 pm. Graduate and undergraduate teaching assistants, teaching staff and faculty hold office hours at this location and are open for questions from everyone who comes by.
- *The Academic Success and Tutoring Center (ASTC)* — one-on-one and small-group tutoring, by appointment.
- An excellent and freely-available collection of problem-solving videos can be found on Professor Thomas Hemmick’s YouTube channel [here](#). They are organized in playlists by topic — look for the playlists titled Solving Physics I: Chapters 01 through 16.
- Another very useful collection of solved problems — this time in book form — with brief reviews, lots of diagrams and detailed explanations can be found in [Eugene Hecht, *Schaum’s Outlines of College Physics*](#) (not required, but greatly recommended).
- Note that e-textbook access in Mastering Physics (which needs purchasing) comes with bonus access to [Pearson + Channels](#), a collection of preparatory videos and practice problems. You can find these by selecting *Pearson eText > Explore Channels*.
- Finally, for a few ideas on how to develop successful academic strategies read [these tips](#) suggested by educational experts from our university.

Recitations

Recitation classes meet once a week. They complement the lectures with a small-class environment designed to foster a closer interaction with both your instructor and your colleagues. While lectures emphasize to a greater extent the concepts and general theory, recitations are focused on applications and problem solving. Take advantage of the interactive format, be active, ask questions about the concepts discussed in the lecture and the problems assigned in the homework. Mastering Physics does not offer detailed explanations for the solutions to the homework problems, and the recitation class is *the* place to have those details filled in. Try as much as possible to have the homework problems that you encounter difficulties with discussed in class. Before the exams there will likely not be enough time to review them all.

Recitation instructors will evaluate your progress with occasional quizzes or by other means which they will establish at the beginning of the semester. At the end of the semester you will receive a cumulative recitation score counting towards your final grade. To account for possible differences in grading rigor between different recitation instructors your recitation score may be normalized.

Homework

Homework will be assigned every week online through Mastering Physics. Before you begin working on your first assignment click on the Grading Policy link on the upper right corner of the page and read carefully how your score is calculated. As a rule, homework will be assigned on the Monday before the relevant material is covered in the lecture and will have a due date on the next Sunday at 9:00 pm. A single deadline deferral will be granted upon request. Beyond that, I will apply a rather strict no-deferral policy, regardless of whether you have justifiable reasons for missing the time limit or not. (Exceptions will be made for *very serious* reasons, such as medical emergencies or mental hardship.) Note, however, that homework deadlines will be soft, with a small penalty of 0.5% per hour overdue; this amounts to a penalty of 12% per day overdue, which, to be clear, **affects only the credit earned after the due date**. It is always good practice to start working on your assignments early enough to allow yourself time not only to finish, but also to handle possible unexpected delays.

Exams

There will be two midterm and one final exam. Their dates and times are listed in the *Course Schedule* section below; exam locations will be announced in advance. The first midterm exam will cover the material discussed in the lecture from the beginning of the semester until the time of the exam. The second midterm exam will cover the material discussed from the first midterm exam until the time of the exam. The final exam will be comprehensive (i.e. from the whole material). Note that the exam scores will not be “curved”. **All students will be expected to take the exams on the dates scheduled, so please plan accordingly. Only exceptionally serious and adequately documented reasons for missing an exam will be considered.**

Grading

Your *course score* will be calculated at the end of the semester based on these percentage weights:

Midterm exam 1	20%
Midterm exam 2	20%
Final exam	30%
Online homework	15%
Recitation grade	15%

The following table will then be used to convert the *course score* into a *letter grade*:

Grade	A	A-	B+	B	B-	C+	C	D	F
% ≥	87	85	83	72	70	68	55	45	<45

Course Policy on ...

- **Exam schedule conflicts:** If you register for this course it is your responsibility to make sure that there are no schedule conflicts for the midterm and final exams with other courses or activities that you may undertake. A schedule conflict will *not* constitute a valid reason for a make-up exam to be given.
- **Extra credit:** There will be no extra credit, or any other possibility to round up a letter grade at the end of the course. It is up to you to monitor your progress during the semester and take timely action to improve your score while such an action can still be taken.

Course Schedule

Week	Giancoli sections
08/26 – 08/30	1.1–7, 2.1–3
09/02 – 09/06	2.4–7 Labor Day 09/02
09/09 – 09/13	3.1–9 Withdraw without a W by 09/09 at 4:00 pm
09/16 – 09/20	4.1–8
09/23 – 09/27	5.1–5 Midterm 1: 09/25 8:15–9:35 pm
09/30 – 10/04	6.1–5, 7.1–4
10/07 – 10/11	8.1–9 Move up/drop down by 10/11 at 4:00 pm
10/14 – 10/18	9.1–9 Fall Break 10/14–10/15
10/21 – 10/25	10.1–9 GPNC or W by 10/25 at 4:00 pm

10/28 – 11/01	11.1–6	
11/04 – 11/08	(skip 12) 13.1–10	Midterm 2: 11/05 8:15–9:35 pm
11/11 – 11/15	14.1–5, 15.1–4, 6–9	
11/18 – 11/22	(skip 16) 17.1–4	
11/25 – 11/29	17.5–9, 18.1	Thanksgiving Break 11/27–12/01
12/02 – 12/06	19.1–9, 20.1–4	
12/09 – 12/13		Last day of classes: 12/09 Final exam: 12/12 2:15–5:00 pm

Standard University Policy

A. Student Accessibility Support Center Statement: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

B. Academic Integrity Statement: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person’s work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the [Academic Judiciary website](#).

C. Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students’ ability to learn.

D. Religious Holidays: This course will operate in compliance with the University’s policy regarding religious holidays, set forth [here](#). In particular, you should notify the instructor in advance, but definitely before the final date of the ‘add/drop’ period, of your intention to be out for religious observance.

E. Student Support: Students must communicate and work directly with their faculty members in the event of an illness or other circumstance that leads to a short-term absence. If a student is struggling with an extended absence due to a hospitalization, family illness or death, they can refer to the [Student Support Team](#).

Mastering Physics FAQ & Troubleshooting

- *What is the course ID?*

If you follow carefully the registration instructions given above you will *not* need a course ID.

- *I already have a subscription from a previous course, should I purchase a new one?*

If your subscription is still active and not due to expire before the semester end date it should do, and you should definitely not purchase a new one.

- *I am not sure yet whether I want to stay in this course, can I avoid committing to a subscription until I make up my mind?*

In this case you may want to consider signing up for temporary access. This will need to be upgraded to full access after the grace period expires (by following the instructions [here](#)).

- *What subscription plan should I choose?*

The minimum requirement is that the subscription should last for at least the duration of the semester. However, when making the choice, you may also want to take into account your future plans for the introductory physics sequence, and perhaps other personal factors. e-Textbook access, while potentially useful, is not required.

- When signing up, spell your name exactly as it appears in SOLAR, including letter capitalizations.
- If you experience problems or receive error messages while signing up or signing in, try
 - restarting your device
 - logging-in from a different device (this is the method most likely to succeed in unwieldy situations)
 - enabling pop-up windows
 - switching to another browser: Mozilla Firefox, Google Chrome, Microsoft Edge, Safari ...
 - [changing the trust settings](#) of your browser
 - clearing the website data.

Also, on rare occasions, the Pearson servers may suffer outages or undergo scheduled maintenance. You can check their real-time status on [this webpage](#).

Should all these measures fail, contact Pearson's Customer Support [here](#).