PHY 131.01 – Classical Physics for Scientists and Engineers I

– Fall 2021 –

General Course Information and Policies

Important Note: Every effort will be made to avoid changing the course schedule, but the possibility exists that unforeseen events will make syllabus changes necessary. It is your responsibility to check Blackboard for corrections or updates to the syllabus. Any changes will be clearly noted in course announcements or through Stony Brook email.

Last updated: 2021-08-10 14:14

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, I want to stress this, 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 should have a solid quantitative understanding of the fundamental principles and concepts of classical mechanics, wave motion, fluids and thermodynamics. They should also have a significant amount of experience in applying these principles and concepts to describe in mathematical terms a range of physical systems 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/private issues. Please allow between 24 – 48 hours for an email reply. Your SBU email must be used for all course-related communications. Recitation-related inquiries should be addressed directly to your recitation instructor.)

Office hours: TBA

Lectures

MWF 8:00 – 8:55 am, Frey Hall 100. The lectures will be live-streamed online through Blackboard. Attendance is not mandatory.

Course Administration

The course administration will be done mainly via Blackboard. Important course announcements will be posted in the Announcements section, or broadcast by class email. Lectures slides and various other course materials will be posted regularly in the Course Documents section.

Required Materials

1. A one-year subscription (if you plan to take both PHY 131 and 132) to Pearson | Mastering Physics to complete online homework assignments. To purchase this, login to Blackboard and go to the course home-folder; then, from the left menu, select Course Tools > Pearson's MyLab & Mastering, and follow the instructions there. If you take this route you will not need a course ID; **this course has no course ID**. Before proceeding with registration please read the important information collected under the heading *Mastering Physics FAQ* at the end of this document. Homework will begin to be assigned in the first week of classes, and **it is imperative that you set this up in a timely manner.**
2. Textbook: Douglas C. Giancoli, *Physics for Scientists and Engineers with Modern Physics*, 4th edition (Pearson Prentice Hall, ISBN-13: 9780131495081). We estimate to cover to various degrees sections 1 (Introduction, Measurement, Estimating) through 20 (Second Law of Thermodynamics). Mastering Physics offers the option of purchasing an integrated digital copy of the textbook. I recommend it, but if you obtain the textbook by other means, that should be fine as well.
3. A calculator. This should have: addition, subtraction, multiplication, division, square root, trigonometric and logarithmic functions. It should ideally *not* have the ability to store formulas, as exams will allow no formula sheets. Since this is not always possible, you will simply be required to reset the memory in front of a proctor before taking any exam. Practice with your calculator in exam mode even on the homework.
4. An electronic device with a video camera and microphone, supporting Zoom, with an internet browser meeting the requirements for the Mastering Physics platform, and a reliable internet connection capable of streaming video. If you need to borrow an electronic device, please visit SBU's Laptop Loan Program.

Help Resources

For a list of ways in which you can get help with this course, including links to the *Help Room* and the *Academic Success and Tutoring Center* — free tutoring services offered by the Physics and Astronomy Department faculty, TAs and UGTAs — follow this link.

An excellent and very useful 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.

For an inspiring and though-provoking collection of general learning tips and academic success strategies, explore this website created by one of our university's teams of educational experts.

Recitations

Recitation classes meet once a week. They complement the lecture 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 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 grade counting towards your final grade. To account for possible differences in grading rigor between different recitation instructors your recitation grade may be normalized.

	Office Hours
Prof. Vladimir Goldman Prof. Martin Roček	

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 located 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. Given the large enrollment of this course I will not be able to process the many demands for deadline deferral that I know from experience are going to come my way every Sunday evening. **So I will institute a strict no-deferral policy, regardless of whether you have justifiable reasons for missing it or not.** (Exceptions will be made for very serious reasons, such as medical emergencies or mental hardship.) However, in counterpart, I will not consider it a hard deadline, but set instead 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 1h20m midterm exams, and a 2h30m final exam. Their dates and times are listed in the Course Schedule section below. Unless otherwise announced, all exams will be in-person, and the examination rooms will be posted on Blackboard ahead of the exam dates. The first midterm exam will cover the material discussed in the lecture until the time of the exam. The second midterm exam will cover the material discussed after the first midterm exam, until the time of the exam. The final exam will be comprehensive (i.e. from the whole material). **All students will be expected to take the exams on the dates scheduled, so please plan accordingly.** Only exceptionally serious and documented reasons for missing an exam will be considered. In this case, supporting documentation must be submitted as early as possible through the Office of the Dean of Students (contact email: student_supportteam@stonybrook.edu, please c.c. me as well).

Grading

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

Midterm exam 1	18%
Midterm exam 2	18%
Final exam	34%
Online homework	15%
Recitation grade	15%

The following *approximate* (!) conversion table will then be used to convert your final score into a letter grade:

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

This conversion scheme should be seen as indicative, and I reserve the right to make adjustments to it, even substantial ones if necessary. In the event that due to adverse developments in our epidemiological circumstances any one of our exams will not be given in-person, this scheme will be abandoned and the grades will be curved. (This means that your performance with respect to the rest of the class will constitute in that case the pre-eminent factor determining your grade. More details will be provided at the time.)

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	Projected sections from Giancoli to be covered (**updated weekly**)	
08/23 – 08/27	1.1 – 1.7, 2.1 – 2.3	
08/30 – 09/03	2.4 – 2.7	
09/06 – 09/10	3.1 – 3.8	Labor Day 09/06
09/13 – 09/17	3.9, 4.1 – 4.8	
09/20 – 09/24	5.1 – 5.4	**Midterm 1**: 09/21 8:15 – 9:35 pm
09/27 – 10/01	6.1 – 6.5, 7.1 – 7.4	
10/04 – 10/08	8.1 – 8.9	Move up/drop down by 10/08 at 4 pm
10/11 – 10/15	9.1 – 9.9	Fall break 10/11 – 10/12
10/18 – 10/22	10.1 – 10.9	GPNC or W by 10/22 at 4 pm
10/25 – 10/29	11.1 – 11.6	
11/01 – 11/05	(skip 12) 13.1 – 13.10	**Midterm 2**: 11/02 8:15 – 9:35 pm
11/08 – 11/12	14.1 – 14.5, 15.1 – 15.4, 15.6 – 15.9	

11/15 – 11/19	(skip 16) 17.1 – 17.9	
11/22 – 11/26	18.1	Thanksgiving break 11/24 – 10/28
11/29 – 12/03	19.1 – 19.9, 20.1 – 20.4	
12/06 – 12/10		Last day of classes: 12/06
		Final exam: 12/09 11:15 am – 1:45 pm

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.

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 at

http://www.stonybrook.edu/commcms/academic_integrity/index.html

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 University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Mastering Physics FAQ

- When registering for Mastering Physics use your stonybrook.edu email address. Also, spell your name exactly as it appears in Blackboard.
- If you are not sure whether you want to stay in this course 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).
- Mastering Physics offers the option of purchasing an integrated digital copy of the textbook. I recommend it, but if you obtain the textbook by other means, that should be fine as well.
- If you experience error messages while signing up or signing in, try
  - enabling pop-up windows
  - clearing website data

- restarting your device
- switching to another browser: Mozilla Firefox, Google Chrome, Microsoft Edge, or other
- logging-in from a different device, such as a tablet, a phone, or another laptop.

If all these measures fail, contact Pearson Customer Support here.