## **Course Information**

Lectures: Tuesday & Thursday 18:00 - 19:20 (14:30-15:45)

Location: Alumni 343

Recitation: Monday (19:30-20:15) & Wednesday (17:00 - 17:50, 19:30-20:15) with your TA

TA office hours :

Textbook: Cutnell & Johnson Physics, 12th edition
 by David Young and Shane Stadler

Practise Problems: Wiley resources

TopHat:

## **Instructor Information**

Instructor: Dr. Arnab Dasgupta

Email: arnabdasgupta@pitt.edu

Office hours: Monday and Thursday, 14:00-17:00, 419 Allen Hall,

Wednesday, 14:00-17:00, 100 Allen Hall,

or by Appointment

## **TA Information**

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| TA Name | Email | Time | Day | Room |
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Please use “PHYS0110” as the subject of all email correspondence.

## **Text and Materials**

The textbook for this course is Cutnell and Johnson Physics by David Young and Shane Stadler.

Phone/Computer (for in-class TopHat questions) and a Scientific Calculator (in addition to phone or device apps, you need a separate stand-alone calculator).

## **Course Description and Objectives**

This course is the first half of a two-semester, algebra-based introductory physics course. This course aims to provide a rigorous foundation in physics and to help students improve their critical thinking and problem-solving abilities. Learning objectives for this course are outlined online at: [https://](https://www.physicsandastronomy.pitt.edu/sites/default/%20les/PHYS_0111_LearningObjectives_2017.pdf)<https://www.physicsandastronomy.pitt.edu/sites/default/files/PHYS_0100_LearningObjectives_2017%20%282%29.pdf>

In particular, you will learn to apply the principles of

● Module 1: Units and Vectors (Ch. 1)

● Module 2: One-Dimensional Kinematics (Ch.2)

● Module 3: Two-Dimensional Kinematics (Ch.3)

● Module 4: Newton’s Laws of Motion (without friction) (Ch.4.1-4.8)

● Module 5: Newton’s Laws (with friction) (Ch. 4.9-4.12, Ch.5)

● Module 6: Work and Energy (Ch. 6)

● Module 7: Impulse and Momentum (Ch.7)

● Module 8: Torque, Angular Dynamics, and Angular Momentum (Ch.8, Ch. 9)

● Module 9: Oscillatory Motion (Ch. 10)

● Module 10: Fluids (Ch.11)

● Module 11: Temperature, Heat, and Thermal Expansion (Cha. 12, Ch. 13)

● Module 12 & 13: Waves and Sound (Ch. 16, Ch. 17)

Attendance is mandatory in both the lectures and the recitations. The attendance will be taken via TopHat.

## **Structure of Class**

Research has shown that student learning is optimal when students are actively engaged in their learning, so this course will make use of evidence-based approaches to facilitate active engagement. To maximally benefit from this course, students should actively participate in class discussions, contribute to group problem-solving activities, and come to class prepared to engage with the material (e.g., by reviewing the relevant textbook sections prior to lecture). I will support you in your learning through interactive demonstrations, thought-provoking discussion questions, and carefully designed activities. As the instructor, I will be accessible to students during office hours and via email, and I will make every effort to provide support in addressing any academic difficulties that may arise.

Each of the Modules related to the Learning Objectives will be typically covered in 1-2 classes. Before the first class in each Module, you will be expected to have read the relevant chapter in your textbook. Then, during class, you will be given a brief overview of the material for that module, via a board, with conceptual discussion questions interspersed throughout the lecture. This will give you a chance to think about the material and discuss it with your peers, and receive credit for your discussions via TopHat. In addition, I will typically incorporate at least one demonstration for each Module. You will be asked to participate in these demonstrations by predicting what you believe the outcome will be, based on what you have learned in the Module. I will present example problems related to each Module, and you may be asked to work in groups on problem-solving exercises.

The process of learning requires persistence through productive struggle and reflection that leads to improvement. As such, exams are seen as part of the learning and growing process, and each exam experience can help inform you on how to improve. By the end of the term, the aim is for students to develop a better understanding of how the discipline of Physics is used to describe natural phenomena and to make testable predictions.

#### **Important Dates Grading Scheme**

January 8th Class Begins Lecture Questions 5%

January 20th No Class Homework 15%

February 3rd Midterm 1 Midterms 60%

February 24th Midterm 2 Final Exam 20%

March 2nd - 9th No class (Fall Break)

March 18th Add/Drop Ends

March. 31st Midterm 3

April 28th Final Exam

**Tentative Schedule**

| Week | Monday | Wednesday |
| --- | --- | --- |
| 1 |   | 01/8 Mod 1 |
| 2 | 01/13 Mod 1 | 01/15 Mod 2 |
| 3 |   | 01/22 Mod 2 |
| 4 | 01/27 Mod 3 | 01/29 Mod 3 |
| 5 | 02/03 Midterm 1 | 02/05 Mod 4 |
| 6 | 02/10 Mod 4 | 02/12 Mod 5 |
| 7 | 02/17 Mod 5 | 02/19 Mod 6 |
| 8 | 02/24 Midterm 2 | 02/26 Mod 6 |
| 9 | - | - |
| 10 | 03/10 Mod 7 | 03/12 Mod 7 |
| 11 | 03/17 Mod 8 | 03/19 Mod 8 |
| 12 | 03/24 Mod 9 | 03/26 Mod 9 |
| 13 | 03/31 Midterm 3 | 04/02 Mod 10 |
| 14 | 04/07 Mod 10 | 04/09 Mod 11 & Mod 12 |
| 15 | 04/14 Mod 12 | 04/16 Mod 12 & Mod 13 |
| 16 | 04/21 Mod 13 | 04/23 Review |
| 17 | 04/28 Final Exam |   |

Mod = Module

Recitation = review during recitation

**Lecture Questions via TopHat**: ([https://app.tophat.com](https://app.tophat.com/) or follow the link in Canvas) We will make use of TopHat for conceptual discussion questions, and as a means of responding to other activities. Questions will be formatted as multiple-choice questions, and you may collaborate with your peers in small groups/pairs. You will receive 80% credit simply for participating in the TopHat response. Should you get the correct answer, then you will receive 100% credit for that question. You do not have to give the same response as the other members of your group–your TopHat responses are confidential and individual. Group discussions are intended to facilitate critical reflection and the exploration of possible solutions; however, students are encouraged to exercise independent judgment and may adopt positions that differ from those of their peers.

TopHat join code:

**Pre-Departmental survey:** Please complete and fill out this form ([https://forms.gle/s4hqmXBY4G3wQ1uz9](https://nam12.safelinks.protection.outlook.com/?url=https%3A%2F%2Fforms.gle%2Fs4hqmXBY4G3wQ1uz9&data=05%7C02%7Carnabdasgupta%40pitt.edu%7C686836274f8947b7fbbb08dddb31d6fb%7C9ef9f489e0a04eeb87cc3a526112fd0d%7C1%7C0%7C638907729317982757%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=26DmSPKEJYau9iCXBJuAImpxkQ5GAo%2BU1M2KtmHJHa8%3D&reserved=0)) before the 5th of September (Friday). Everyone will get an extra credit for completing the survey.

**Recitation Work**: During the recitations, your TA will discuss with you problems (similar to homework problems) that you will complete in small groups.

**Homework**: Understanding how to apply concepts in Physics to solve problems is very important for your success in this class. Therefore, homework problems are a very important part of this course. Homework problems will be assigned every week and will be due on Sundays at 11:59 pm (see tentative schedule). The homework will be online via Wiley. The homework assignments are not intended as collaborative work, but you are welcome to discuss problem-solving strategies with your classmates. If you need help with the homework, ask questions at the recitations or/and at office hours.

**Exams**: Exams will be multiple choice. Books and other resources will not be allowed, but you are allowed to bring one page of a double-sided Letter-format formula sheet. The final exam will only be focused on the topics covered after Midterm 3. The grading rubric will be decided by the instructor and will not be discussed with the students.

**Attendance**: Regular attendance is a critical component in achieving strong performance in the course. If you must miss class for health-related reasons, you should notify me in advance of your absence. If you must miss class for an emergency, please notify me as soon as you possibly can. Whether or not you are excused from in-class assignments will be at my discretion. Generally speaking, if you have been absent more than three times, I will request a doctor’s note to justify any further absences. Unexcused absences will result in a loss of credit for graded in-class activities. For excused absences, those activities will be excluded from the grade calculation; however, no make-up opportunities will be provided under any circumstances. Therefore, you will be responsible for ensuring that you understand the material, concepts, and problems that have been covered in class, as you will still be expected to utilize this understanding on exams and/or recitation work. Feel free to ask your peers to share any information they have about what you missed. Even if you do not receive credit for what you missed, it will be good for you to know what was done in class in order to do well on the exams. If you are still reading this, send me a picture of your favorite animal and a science-related pun by the end of the first week to receive extra credit for your attendance (1 credit to your final).

**Canvas**: (https://canvas.pitt.edu/) Canvas is the course management system for the University of Pittsburgh. There you will find all of the course materials, such as the syllabus, lecture notes and links for the other systems listed below. Canvas will also act as the master gradebook for the course.

**Code of Conduct**

Communication is key to a productive learning environment, and we can maintain productive communication by exhibiting respect for one another. The success of the course for yourself and others depends on all of our commitment to behavior that demonstrates respect for differences, understanding towards others and a willingness to listen and learn. It is unacceptable to harass, discriminate against, or abuse anyone because of race, ethnicity, gender, disability, religious affiliation, sexual orientation, or age. If you witness or are subject to such harassment, please report it to the instructor.

**Honor Code**

Students are expected to uphold the University’s standard of conduct relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit. Some examples of honor code violations include:

1. Representing the work of others as their own
2. Using or obtaining unauthorised assistance in any academic work
3. Giving unauthorised assistance to other students
4. Modifying, without instructor approval, an examination, paper, record, or report
5. Misrepresenting the content of submitted work

Any student violating the honor code is subject to receiving a failing grade for the course and will be reported to the Vice President of Academic Affairs.

**Disability Services**

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and Disability Resources and Services as soon as possible. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call (412) 648-7890 to schedule an appointment. The Disability Resources and Services office is located at 140 William Pitt Union, and is open Monday-Friday from 8:30 AM to 5:00 PM.

**Title IX**

Legal text: “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.” As a professor, I am required to report violations of Title IX that I observe or am made aware of to the Title IX office. Title IX violations include, but are not limited to, sexual harassment, sexual violence and verbal or sexual abuse. Within the classroom, behavior in violation might appear as suggestive jokes or innuendos, inappropriate touching, and unwanted sexual behavior or advances.