

UNIVERSITY PHYSICS - II

Spring 2022

Instructor:	Prof. Shaon Ghosh	Time:	Tu/F 11:15 am – 12:30 pm
Email:	ghoshs@montclair.edu	Place:	University Hall 1070

Course links:

1. Official Course page: <https://montclair.instructure.com/courses/154092>

Office Hours:

- Thursday 9:45 am - 12:00 pm
- Friday 9:45 am - 11:00 am
- Appointments outside the above hours as convenient for the students and the instructor

T.A.:

- Roberto Onoz
- TBD

Text book:

- Randall D. Knight, *Physics for Scientists and Engineers, A Strategic Approach*, Pearson

Description of the course: This course provides the foundations of physics that is assumed in advanced courses in physics, chemistry, engineering, biology, and medicine. The knowledge gained in this course will also help you better appreciate (and quantitatively study) the natural world. Most importantly, this class will help you develop critical thinking and problem solving skills that will be applicable in other classes that may be taking in the future, and make you more confident to work in any technical field. A summary of the course is provided below:

- oscillations
- waves
- sound
- Electric charge and electrostatic force
- Electric field and Gauss' law
- Electric potential
- Electric Energy and Capacitance
- Current and Resistance
- Direct-Current Circuits

- Magnetism
- Electromagnetic Induction
- Electromagnetic Waves. AC Circuits.
- Wave Optics: Interference and Diffraction of Light
- Ray Optics: Reflection and Refraction of Light

Not all topic may be covered in full details if we do not get enough time.

The purpose of the laboratory portion of the class is to illustrate physical principles more concretely, and to provide experience in measuring and analyzing experimental data. In addition to performing experiments, we will also use the laboratory time for problem solving practice, student presentations, individual meetings, or other activities. As the amount of equipment and size of each lab group is limited, you should only attend your scheduled lab period. Lab groups are determined by the instructor and may vary between lab periods.

Extra Help: In addition to my office hours there are two other ways you can obtain extra help in this course. There will be two dedicated tutors for this course who provide Supplemental Instruction. This will be a current MSU students who have taken the class. See more information at <https://www.montclair.edu/physics-astronomy/physics-tutoring/>. Furthermore there will recitation sections available for all students taking PHYS 192. I will be instructing in these recitation sections were we will be working out physics problems, and will spend time in teaching you how to tackle problems. We are introducing this new mode of teaching because we observed that students have difficulty in solving physics problems even after understanding the concepts of physics very clearly, and lecture hours are not adequate to solve many problems. Recitation section hours will partially overlap with the office hour. I will be aided by a student instructor during the recitation section.

Recitation section hours:

- Thursday 9:45 am - 11:00 pm
- Friday 9:45 am - 11:00 am

If the recitation section slot does not work for you and you need extra help with the problem solving, then please reach out to me via email, and I will accommodate hours outside that.

Evaluation components:

- **Assignments:**

1. **Homeworks:** Homeworks will be assigned roughly once every one or two weeks depending upon the pace at which we are covering the material. Homework will be assigned on canvas, and you will need to submit it there. Often homework will be assigned on topics that I will be covering during that week. However, you do not need to wait for me to finish all the topic. A subset of questions you might already be able to solve when I make the homework available. You should feel free to start solving them, and save time. Homework problems are supposed to be testing your in-depth knowledge of the subject. You can expect the questions in the test to be extremely similar to the homework problems. So, it is very important that you are able to solve the problems correctly in the homework **by yourself**. If you cheat, or take help from someone and simply write out the solution without understanding them, you will get full points in the homework, but you will not be able to solve the problem in the exam, which will have a significantly higher weightage. It is far better to try the homework yourself and fail to do it and get a zero in the homework, and then talk to me about the problem, learn how to solve it and then score full points in the exam.

2. **Quizzes:** Quizzes are in class component of this course. Questions during a quiz are going to be more conceptual and not something that will require you to do long calculations. Sometimes I will be announcing the quiz in advance, other times they might be held without notice. This is to make sure that you are also preparing yourself on the side. There will be two types of quizzes, one where you will be taking the quizzes on your own, and then on some occasions you will be taking the quizzes in groups. This is true for both announced or unannounced quizzes. The quizzes may be held at the beginning of the lecture, in the middle, or in the end. There will be no option of retaking the quiz if you are late in the class, or you are absent, because I will be solving the questions right after the quiz (unless the quiz is at the end of the lecture, then I will send you the solutions via email).
3. **Reading assignments:** Roughly every week there will be a reading assignment, which will require you to read a section of the text book answer some questions based on that. The reading assignments will be mostly based on topics that I am about to cover the next week, but not limited to that. The difference between the homework and the reading assignment is that the reading assignment is always going to be on the matter that I will be covering in the class after the submission. Thus, the reading assignment problems are going to be very simple, so that a student can simply read the chapter and answer them, without much in-depth knowledge of the material. Reading assignment will always be for specific sections of the book, thus, you do not need to read the whole chapter to answer the questions, letting you focus on the material. The goal of the reading assignment is to encourage to read the chapter before you come to the class. This makes it much easier for you to follow the class, and when you understand the discussion, you will also enjoy it more. If during the reading assignment you find that you are not able to understand some of the topics, then during the class when I am going to talk about it, you may already have questions ready to be thrown at me.

The two lowest scoring quizzes, two lowest scoring reading assignments, and two lowest scoring homework will be dropped from your final grades calculation. This is to protect you against occasional poor performances or absence. Reading assignments and homeworks will be almost always on Canvas. In class quizzes will be paper-based.

- **Exams:** There are going to **two midterms** and **one final** exam. All exams will be closed books/notes. Midterms will be based on the material covered before that midterm and after the previous midterm. The final exam will be based on everything taught during the semester. **Barring extenuating and documented circumstances there will be no opportunity to retake the exams or to take it on another day.** So, please make sure not to miss the exams.

You should bring your own pen/pencil and calculator during the exam. Use of any kind of phone or tablet is strictly forbidden, even in a calculator-mode when calculators are allowed.

- **Class participation:** Class participation includes your attendance, interactions during the class, and overall involvement during the course.
- **Extra credits:** There might be opportunities to score extra credits. This can boost your grade in the class, or help you compensate for missed assignments.

Grading Policy:

- Homeworks = 5%
- reading assignments = 5%
- Lab = 15%
- Quizzes = 15%

- 1st mid-term = 15%
- 2nd mid-term = 15%
- Final exam = 25%
- Class participation = 5%
- Extra credits.

This is the default final grading policy may be modified for the class.

Grading Scheme:

- 95% - 100% = A
- 90% - <95% = A-
- 85% - <90% = B+
- 80% - <85% = B
- 75% - <80% = B-
- 70% - <75% = C+
- 65% - <70% = C
- 60% - <65% = C-
- 55% - <60% = D+
- 50% - <55% = D
- <50% = F

Important Dates:

Midterm #1	TBD
Midterm #2	TBD
Final Exam	TBD

Course policy and expectation:

1. **Phones, tablets and laptops are not allowed during the lectures, or at any time during the class. This includes note taking devices. I will call you out if I see you in violation of this. If the behavior persists, I will report you to the dean's office.**
2. Students are expected to follow all MSU policies regarding harassment, bullying, plagiarism, and computer usage. We all in this course must treat each other with respect.
3. Maintain academic atmosphere in the class. **Do not engage in personal discussion with your classmates while the class is in progress.** This not only disturbs me but also your classmates.
4. Attendance at every lecture is not required but will be encouraged via pop quizzes and class-participation points. Please arrive for lecture on time to avoid missing out on early class quizzes. Extra time may not be provided.

5. Be prepared for class. Text reading, if they are assigned should be completed before class to maximize understanding.
6. Collaboration policy: you can of course discuss homework problems with your classmates, but you must understand and complete the assignment independently. Please note that the homeworks and reading assignments constitute two of the smallest components of the course (only 10%), hence has minimal impact on your grades. The only reason the homeworks are important are because similar questions from homeworks will be given on the exams. There will be a minimum of 10% penalty for late homework submission.
7. Plagiarism, cheating, or any form of academic dishonesty will not be tolerated and could result in a zero for an assignment or an F in the course, as well as a referral to the Dean of Students. Examples of academic dishonesty include: submitting a homework response that is not based on your personal understanding of a problem; lifting portions of a written report from Wikipedia or another source without proper citation. During exams it is very important that you follow these very carefully, because these rules will be most stringently enforced there. You are not allowed to bring books during the exam. Use of any electronic gadget other than a pocket calculators is prohibited in the exam.
8. Class participation credit (aside from attendance and engagement in discussions) will be assigned generously based on compliance with the above policies. You will get a zero in this category if you violate the aforementioned course policies.
9. Reasonable accommodation for students with a documented disability can be arranged by visiting the Disability Resource Center (DRC, Morehead Hall 305) and requesting an accommodation letter. This letter should be supplied to me during the first two weeks of class.