DEPARTMENT OF PHYSICS AND ASTRONOMY
VASSAR COLLEGE

COURSE SYLLABUS – Phys 114: Fundamentals of Physics II | Spring 2026

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Office hours: Mondays and Wednesdays from 10:30 pm to 12:30 pm.

Lectures: Sanders Physics (SP) 105, Tuesdays and Thursdays 12:00 to 1:15 pm.

Prerequisites: MATH121, MATH125, and PHYS 113 or placement test score

Description: This course focuses on the theoretical description of basic electricity and magnetism. The first part of the course is devoted to the description of the electric fields and forces, currents, and simple circuits; the second part is dedicated to magnetic phenomena and its origin, behavior, and some applications. The relationship of the electric and magnetic field is studied by the analysis of Maxwell's equations is also considered.

It is expected that the student has good management of differential and integral calculus. It is suggested to contact the instructor if there is any doubt about this.

Topics: Electric charge, electric field, electric force, current, resistance, capacitance, inductance, magnetic field, magnetic force, electromagnetic induction, Maxwell's equations, among others.

Grading: Final grades will be computed using the following percentages:

Homework:	**15%**
Lab attendance	**10%**
Class Contributions:	**5%**
Midterm #1:	**20%**
Midterm #2:	**20%**
Final Exam:	**30%**

Scores (percentage) will be available after the Midterms. Please, compare your grades to the posted ones and make sure that your scores have been submitted correctly!

Class Contributions:

Positive class participation is an essential part of your grade. Demonstrating that you are willing to share and discuss your work and thoughts on the subject is a statement about your ability to function in an academic community. Students must come to class prepared to ask questions and discuss the homework assignment. Students are required to read the indicated sections closely enough that they are subsequently able to not only recall the material but also demonstrate the ability to comprehend, analyze, and synthesize the material enough to ask questions and discuss the material. Some of the activities that will reduce your earned class contribution grade drastically are the use of cell phones (or any other unauthorized electronics) during class time, disruptive behavior, lateness, or absence from class, engaging in activities that are unrelated to the class topic. Class contributions consist of thoughtful and frequent class participation, in-class work, and small projects.

Exams: There will be two in-class midterm exams and a regularly scheduled 2-hour final exam. Exam questions will consist of three types: brief concept questions (usually multiple choice) and numeric problems. All the questions and problems will be taken from homework, lecture problems, and special assignments (material available on internet like videos, lectures, and papers, among others), so it is suggested to cover every single resource.

Exams may be missed for exceptional reasons, requiring previous approval of the instructor, or in the case of an emergency, an approved note from the Dean of Studies with documentation for the emergency.

Accommodations: Academic accommodations are available for students registered with the Office for Accessibility and Educational Opportunity (AEO). Students in need of disability (ADA/504) accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AEO accommodation letter.

Textbook: There is not a specific book, but it is suggested to review:
https://openstax.org/books/university-physics-volume-2/pages/1-introduction

Homework: Homework will be assigned via the ExpertTA online, which you can register on the course in the following link: https://reg.theexpertta.com/USU34NY-8D366B-3UK. The homework is assigned automatically, and it is advised to solve it as the course advances.
Note: If you cannot pay for the ExpertTA subscription, **please let me know as soon as possible**.

Lectures, Reading, & On-line surveys:
Lectures will focus on the key concepts. The Lectures are meant to discuss important concepts that students learn during the reading previous to the Lectures – it is important to read the material, attend, and participate in the Lectures.

Attendance Attendance is a key factor in enabling students to access course materials and achieve the intended learning outcomes. Accordingly, students who miss **four classes** during the course, not necessarily consecutively, will be referred to the Dean of Studies for possible withdrawal from the course, in accordance with College policy. If a student remains enrolled after incurring **four** absences, those absences are sufficient to irreparably disrupt the learning process, and the student will not pass the course.

Lab The lab is an essential part of the course, and attendance is required. While the lab grade only contributes 10% of your total grade, **if you fail the lab (less than 60%)**, you fail the course. Also, two or more unexcused absences to the lab will result in you failing this course. Make-up labs will only be possible in exceptional circumstances and if the absence was excused. Absences will only be excused if one of the following occurs:
• student was sick and has a doctor's note
• student has an academic event or conference with a note from the instructor coordinating the academic event
• student has a sporting event with a note from their coach
If you have one of the above cases, you must contact the lab coordinator, David Rishell, with the proper documentation as mentioned above. The sooner you notify the lab coordinator of one of these time conflicts, the better the make-up can be accommodated. If you become quarantined at any time during the semester, please reach out to David Rishell and your lab instructor for instructions on how to complete the lab. Your lab instructor will be determined based on what section you are signed up for. The lab syllabus will be explained in more detail at the 1rst meeting of your section. In general, the experiments in the lab will be closely related to the topics contained in the lecture during the previous week or the current week. However, there will occasionally be topics that the lab instructor may need to introduce. Lab grades will be posted on a separate Moodle page.

The instructor of this course does not have any authority over the Lab section. The same happens with the Lab instructor over this course.

Course

Schedule: *Appendix 1* is a ***tentative*** course schedule with reading assignments for each class. Chapters listed in the course schedule below should be read before **and** after the associated lectures in order to gain a firm grasp of the material. The Mid-term dates shown on the course schedule can change; in such a case, the new date will be given at **least one week in advance.**

Title IX: Vassar College is committed to providing a safe learning environment for all students that is free of all forms of discrimination and sexual harassment, including sexual assault, relationship abuse, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. Vassar College has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware all Vassar faculty members are "responsible employees," which means that if you tell me about a situation involving sexual harassment, sexual assault, relationship abuse, or stalking, I **must** share that information with the Title IX Coordinator. Although I have to make that notification, the Title IX office will only provide outreach by email. You will control how your case will be handled — you don't have to read or respond to the email, and it is completely up to you whether to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone privately, you can contact any of the following on-campus resources:

- Counseling Service (counselingservice.vassar.edu, 845-437-5700)
- Health Service (healthservice.vassar.edu, 845-437-5800)
- Nicole Wong, SAVP (Sexual Assault and Violence Prevention) director (savp.vassar.edu, 845-437-7863)
- SART (Sexual Assault Response Team) advocate, available 24/7 by calling the CRC at 845-437-7333 and asking for SART
- The SAVP website (savp.vassar.edu) and the Title IX section of the EOAA website (eoaa.vassar.edu/title-ix/) have more information, as well as links to both on- and off-campus resources.

Appendix 1

Week	***Day 1***	***Day 2***
1		Electric charges Charges, Forces, and Fields
2	Charges, Forces, and Fields	Gauss' law
3	Gauss' law	Electric potential
4	Potential and Field	Capacitors
5	Resistor	DC circuits
6	1st Midterm	Magnetic fields and forces
7	Magnetic fields and forces	Induction
8	Spring Break	
9	Spring Break	
10	Induction	AC circuits
11	AC circuits	EM waves
12	Maxwell's equations	Maxwell's equations
13	2nd Midterm	Ray optics
14	Ray optics	Ray optics