Worcester Polytechnic Institute

PH1120: General Physics – Electricity and Magnetism
Physics Department
E Term 2026

COURSE INSTRUCTOR:

Name: Prof. Izabela Stroe
Pronouns: she/her/hers
Email: izabela@wpi.edu
Office Hours:
On-Zoom (Class Zoom Link) Monday 6:00 pm – 7:00 pm and Wednesday 12:00 pm – 1:00 pm or by appointment (izabela@wpi.edu)

LABORATORY MANAGER:

Name: Dr. Veneta Tountcheva, Lab Manager
Email: vtountcheva@wpi.edu

PEER LEARNING/TEACHING ASSISTANTS:

Name: TBA
Email:
Office Hours: TBA

COURSE TIME AND LOCATION:

July 6 – August 7, 2025
Online: Synchronously and Ashyncronously

TEXTBOOK (AND/OR OTHER REQUIRED MATERIALS):

Textbook:

University Physics with Modern Physics by Young and Freedman 15th Edition (ISBN-13: 978-0135216118).
A hard copy of the textbook is not required.

MasteringPhysics:

The class will use the active learning platform Mastering Physics (https://www.pearsonmylabandmastering.com/northamerica/) for Homeworks, Pre-lecture Readings, Class Problems Solving Sessions, and in-class Exam taking. If you have not used Mastering Physics before you can it purchase from the bookstore or online the MasteringPhysics access with eText.

Worcester Polytechnic Institute

ZOOM App:

You will need ZOOM app installed on your computer or other mobile device to access the online lectures if necessary.

COURSE DESCRIPTION:

This course will introduce the central topics of electromagnetism including Coulomb's law, electric fields and currents, simple electrical circuits, magnetic fields and induction, and electromagnetic oscillations.

PREREQUISITE COURSES:

Recommended background: working knowledge of material covered in PH 1120 and concurrent study of MA 1022 (or higher). Please see description of these courses here: https://www.wpi.edu/academics/calendar-courses/course-descriptions/17881/mathematicalsciences

LEARNING OUTCOMES:

On completion of the course, you will be able to

- explain basic laws and concepts in electricity and magnetism
- apply algebra and calculus to solve mathematical problems in topics covered by the course
- identify the physical laws and concepts of electricity and magnetism that underline a wide range of technological applications we use daily.

There will be the five lab sessions integrated with this course. After completing the labs, you will learn how to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

COMMUNICATION:

- If you have questions regarding the lectures, Homework, grades, accommodations, and other administrative aspects of the course, please contact Prof. Stroe via email (izabela@wpi.edu).
- If you have questions regarding the lab schedule, labs procedure/data/reports and grades please contact the lab TAs or lab manager via email. TAs emails will be communicated via Canvas and in the first laboratory.
- The email response will be within 48 hours. To help me read your email in time, ***please include "PH1120" in the subject line of your email***
- The course instructor, and the TA will hold office hours for questions regarding the lecture and homework and other aspects of the course. The office hours are posted above and will be announced in class.
- The lab instructors will answer your questions regarding the labs, lab schedule, and lab grading policies.

- CHAT Forum on Canvas Lecture site. Always check the CHAT forum to ask a question about the class and see if a response has been posted for your question.

COURSE APPROACH:

- We will cover about two textbook chapters per week. See the Course Schedule below for a complete course topic information. There will be two non-cumulative exams, each exam covering 3-4 chapters.

- **Lectures:** The course is designed to offer active learning experience. In this format, **pre-lecture readings will be posted online on Mastering Physics before each lecture**. During lectures, the concepts will be introduced emphasizing how physics applies to real-life. Each week, we will have active problem sessions during lecture time, when you will work in groups to solve problems.
- **Class work/Discussion Problems** will be assigned on Mastering Physics and completed during class time.
- **Homework Assignments**: Online Homeworks will be assigned via Mastering Physics My Lab for each topic with appropriate due dates. Mastering Physics access documents are posted on Canvas.
- **Exams**: There will be two exams scheduled for this class (see course calendar) in person on Mastering Physics. The dates and the chapters covered in each exam are listed in the Course Schedule below and will be reiterated during class time. A Study Guide for each exam will be available.
- **Labs:** Labs are a required component of PH 1120. Labs will help you understand essential aspects of physics beyond what we cover during lectures (the "theory" part of the course). While the topics you'll encounter in the lab are like those in lecture, the lab component functions separately. Contact Dr. Veneta Tountcheva (vtountcheva@wpi.edu) if you have any questions about the lab.

COURSE SCHEDULE AND TOPICS: See Course Calendar

COURSE REQUIREMENTS:

1. **Grade Determination Breakdown**
   a. Exams (50%). There will be 2 exams, each with a maximum score of 50 points.
   b. Lab (20%). There is lab component integrated with the class. You are required to complete all the labs and submit a lab report for each of them. The lab grade will be the average score over all the lab reports.
   c. Homework Assignments (20%).
   d. Class Work (10%). During lectures there will be active learning problem solving sessions. You will practice problem solving skills by working on a set of assigned problems.

Grading will be determined based on students' efforts in 4 different categories:

Category	Grade Distribution (Percent/Points)
Exams	**50% (50 points each Exam)**
Homework on Mastering Physics	**20% (20 points)**
Labs	**20% (20 points)**
Pre-lecture questions and Discussion Problems on Mastering Physics	**5% Correctness (5 points)** **5% Participation (5 points)**

1. **Assignments**

   Homework Assignments via Mastering Physics: Practicing problem solving is an important component of learning and understanding theoretical concepts. Physics problems will be assigned via the online system Mastering Physics. The deadlines for each of the homework will be available on Mastering Physics. For each assignment you will have available 2 attempts. If after completing these attempts you would like to increase your score, you can revisit the problems using AI. As you complete the HMW, you will be required to acknowledge the resources you used, by responding to several questions.

   Pre-lecture Readings: Before each lecture pre-lecture questions will be assigned on Mastering Physics. These questions are conceptual questions and will emphasize the concepts we will cover in detail during lecture time.

   In Class Discussion Problems: Each week, we will solve problems during class time. These problems will be assigned on Mastering Physics, and you will work in groups to complete them. **These problems are not homework!**

   Lab Reports: Lab instructions will be available via Canvas. Each week a new lab will be assigned. **The first lab assignment starts as announced in Canvas.** The lab reports should be submitted via Assignments in Canvas. More information will be provided by your lab TA and our Lab Director via Canvas.

2. **Late Work Policy**

   Late work is not encouraged in this class. However, if you have strenuous conditions, please communicate with your Professor or Lab TA.

3. **Class Participation Expectations and Criteria**

   Classes will involve a combination of lectures, group discussions, and group problems and activities. The electronic records of these questions and activities form your grade for participating in class. If we solve problems in class, you will receive half points for participation and half points for correctness.

If you are unable to attend class in-person, email me at izabela@wpi.edu (ideally ahead of time) to check in. If all goes according to plan, class will be recorded and shared to assist you in reviewing the content and staying up to date. Participation in the class is rewarded with 5% by simply answering the questions on Mastering Physics during lecture or Discussion Session.

TECHNICAL REQUIREMENTS:

Given that this class is delivered online you will need access to a phone (android/iphone), ipad/tablet or laptop. Decent internet access is required for accessing the materials and complete the Assignments.

LIBRARY ACCESS:

All Gordon Library services are open fully in-person and online. All the library staff will be available in-person and online and working to support students in whatever way they can. They will continue to provide services including online library instruction, support for obtaining and linking to digital course materials, interlibrary borrowing of digital materials, virtual research consultations for students, and more. Please visit the library web site and choose the link "Remote Resources," directly below the search box, for one-stop access to information about all our online services.

POLICIES

ACADEMIC INTEGRITY:

You are expected to be familiar with the *Student Guide to Academic Integrity at WPI* that is downloadable from here. Consequences for violating the Academic Honest Policy range from earning a zero on the assignment, failing the course, or being suspended or expelled from WPI.
Common examples of violations include:

- Copying and pasting text directly from a source without providing appropriately cited credit
- Paraphrasing, summarizing, or rephrasing from a source without providing appropriate citations.
- While working in groups for the labs and solving the homework problems is strongly encouraged in this class, collaborating on exams is considered cheating.
- Turning in work where a good portion of the work is someone else's, even if properly cited.

ACADEMIC ACCOMMODATIONS:

We at WPI strive to create an inclusive environment where all students are valued members of the class community. If you need course adaptations or accommodation because of a disability, or if you have medical information to share with us that may impact your performance or participation in this course, please make an appointment with us as soon as possible. If you have approved accommodation, please request your accommodation letters online through the Office of Disability Services student portal. If you have not already done so, students with disabilities who need to utilize accommodation for this

course are encouraged to contact the Office of Accessibility Services as soon as possible to ensure that such accommodation is implemented in a timely fashion.

Email – AccessibilityServices@wpi.edu
Phone – (508) 831-4908
On Campus – 5th floor of Unity Hall

AI USAGE POLICY FOR THIS COURSE

Artificial Intelligence (AI) tools, such as the AI course tool in Mastering Physics, ChatGPT, and others, are becoming increasingly integrated into education. In this course, students are allowed to use AI under the following guidelines:

1. **Ethical and Responsible Use:** AI should be used as a learning aid, not a substitute for critical thinking, problem-solving, or original work.
2. **Permitted Uses:**
    - Clarifying concepts and explanations.
    - Assisting with specific concepts and mathematical gaps.
    - Checking work for errors and improving clarity.
3. **Prohibited Uses:**
    - Submitting AI-generated work as your own without critical engagement.
    - Using AI to complete assignments without personal effort or understanding.
    - Copying AI responses verbatim without proper attribution or modification.
4. **Disclosure Requirement:**
    - If AI is used, students must include a brief statement describing how AI was utilized in the assignment.
    - Failure to disclose AI use may impact grading and academic standing.
5. **AI Reflection Assignments:**
    - Some assignments will require students to compare work completed with and without AI. These reflections will assess AI's impact on learning and problem-solving.

This policy is designed to encourage responsible AI use while fostering deeper learning and academic integrity. Misuse of AI may be considered academic misconduct. Examples of how to acknowledge your use of AI can be found here.

RESPECT FOR DIVERSITY:

It is my intent that students from all backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be utilized as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, ability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of

the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

GRADING POLICY:

Final course grades are based on a student's performance as follows:

Letter Grade	Percentage
A	90 - 100
B	80 - 89
C	70 - 79
NR	< 70

Course incomplete may be granted if a major part of the course is completed. In addition, in the case of an incomplete, the student is responsible for handing in the final work within the WPI required timeframe of one (1) year. After this time, an incomplete grade changes to a failing (NR) grade.