

**University of Wisconsin – Stevens Point**

**Department of Physics and Astronomy**

**University Physics II – PHYS 250**

**Spring 2024**

---

**Instructor:** Maryam Farzaneh

**Contact:** B105 Science Building, [mfarzane@uwsp.edu](mailto:mfarzane@uwsp.edu)

**Class times**

**Lecture (SCI-D101):** Monday, Wednesday, Friday 11:00 – 11:50 am

**Discussion (SCI-A112):** Wednesday 1:00-1:50 pm (Section1)  
Wednesday 2:00 -2:50 pm (Section2)

**Laboratory (SCI-B112):** Thursday 9:00 – 11:50 am (Section 1)  
Thursday 2:00 – 4:50 pm (Section 2)

**Office hours:** MF: 1:00 – 2:00 pm and T: 10:00 – 11:00 am

If you cannot make any of the above office hours, **please know that I have an open-door policy. Please stop by as often as you wish or make an appointment by emailing me.**

**Pre-requisites:** PHYS240, MATH 226 (Calculus II)

**Textbook:** *Physics for Scientists and Engineers*, Serway and Jewett, 10<sup>th</sup> edition.

**Required Material**

**Calculator:** Please have a scientific calculator handy. A cell phone is *not* a calculator.

**Lab notebook:** Quadrille ruled preferred.

**Course Description and Objectives**

Physics 250 covers foundational topics in electricity, magnetism, waves, and optics and continues to introduce you to the mathematical representation of the physical world. This theoretical work will be supplemented by experiments that introduce you to contemporary laboratory instruments and measurement techniques, as well as the mathematical methods of data analysis

By taking this course you should expect the following:

1. You should be able to explain the major conceptual ideas in physics and apply them to the solution of scientific problems.
2. You should be able to apply mathematical methods to the solution of physics problems.
3. You should be able to analyze an experiment and be able to construct a mathematical model to explain the results you obtain from that experiment.

## Lecture Participation

I strongly encourage you to attend *all* the lectures and take detailed notes. Sometimes the lecture covers more material than you might find in your textbook.

## Discussion

Discussion class is designed around the material you have learned in lecture. At the beginning of each class, I will briefly review the relevant topics discussed in lecture. I will then distribute a problem set which is your homework assignment for the week. You are encouraged to work on the questions and problems in groups of two or three and discuss the problems with each other. Most of the discussion will take place within or between the groups. My role will be to answer any questions and provide any help and guidance you need.

Your discussion grade is based on attendance and participation and counts for 5% of your overall grade.

**You will receive a grade of zero on the discussion if you leave in the middle of the class without a legitimate excuse.**

## Homework

You will have one homework assignment per week. Homework problems are the same as your discussion problem set (see above) and are handed out in the discussion class. You typically have one week to work on your homework.

I will post the solutions to the entire homework assignment on Canvas right after all homework assignments are submitted. **If you need an extra day or two to finish your homework, please let me know. I generally grant extensions. However, I do not accept assignments which are unreasonably late, unless you have talked to me about the situation in advance.** *Your homework grade will count for 20% of your overall grade.*

## Laboratory

Once a week, you will work in groups of three or four and carry out experiments that are designed to enhance your understanding of the concepts and topics learned in class. A write-up for each lab will be handed out in the beginning of the lab period. Every student should expect to be **actively** participating in the laboratory. Your lab grade will be based on a technical lab report that you write in your individual lab notebooks. The completed notebooks are due at the end of each lab period. However, you may have an extra day to finish your report. I will hand out a guideline on how to write a lab report during our first lab session. I will drop your lowest lab grade. *Your lab grade will count for 15 % of your overall grade.*

## Exams

There will be *three* midterm exams during the semester, not counting your final exam. These exams will be held **on weeks 4, 8, and 12 (please see the course schedule) during the lab period.** The final exam is non-cumulative and is scheduled for **Monday, May 13, 8:00 – 10:00 am.** *Overall, these four exams count for 60% of your grade (15% each).*

## Grading and Evaluation

I will calculate your grade based on a weighted percentage of your scores as follows:

Homework	20%
Discussion participation	5%
Laboratory	15%
Exams (3 midterms, 15% each)	45%
Final exam	15%

Your overall letter grades will be determined as follows:

93% and above	A	87--89%	B+	77--79%	C+	67--69%	D+
90--92%	A-	83--86%	B	73--76%	C	60--66%	D
		80--82%	B-	70--72%	C-	below 60%	F

Please note that I do *not* grade on a curve. Grades will be rounded up. For example, 86.6% will become an 87% (B+), but 86.3% will remain a B.

### General Course Policies

- **Disability services**

UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a condition during the semester where you need assistance, please contact the [Disability Resource Center \(DRC\)](#) located at 108 Collins Classroom Center (CCC) as soon as possible. DRC can be reached at 715-346-3365 or at [drc@uwsp.edu](mailto:drc@uwsp.edu).

- **Academic misconduct**

As a student at UWSP, I expect you to be familiar with the Chapter 14 of the UWSP policy document on Academic Misconduct (especially Section 14.03) found here: <https://www3.uwsp.edu/dos/Pages/Student-Conduct.aspx>.

Simply put, ***do not*** copy each other's homework, lab reports and exams and pass them off as your own. Any confirmed incidence of academic misconduct, including plagiarism and other forms of cheating will be treated seriously and in accordance with the University policy.

- **I do not assign work for extra credit. There are *no* bonus points that you can earn.**
- Once you hand in your final exam, there is nothing more you can do to change your grade.

## Tentative Course and Lab Schedule

The tentative course schedule is as follows. This might change, and I will try my best to announce any changes beforehand.

Week	Chapter and Topic	Lab
(1)	(22) Introduction, electric charge, electrostatic force	No Lab
(2)	(22, 23) Electric field and field lines, Field of a continuous charge distribution	Lab1
(3)	(23) Electric flux, Gauss' law, symmetry, surface integrals	Lab 2
(4)	(24) Electric potential	<b>Exam 1 (No Lab)</b>
(5)	(25) Capacitance and dielectrics	Lab 3
(6)	(26) Electrical conduction, current and resistance	Lab 4
(7)	(27) DC circuits	Lab 5
(8)	(28, 29) Magnetic field and sources of magnetic field	<b>Exam 2 (No Lab)</b>
<b>SPRING BREAK – NO CLASSES</b>		
(9)	(30) Faraday's Law and Electromagnetic Induction	Lab 6
(10)	(33) Electromagnetic waves (34) Nature of Light, Ray Optics	Lab 7
(11)	(35) Image formation by mirrors and lenses	Lab 8
(12)	(36) Wave Optics, Interference	<b>Exam 3 (No Lab)</b>
(13)	(37) Diffraction	Lab 9
(14)	(37) Polarization	Lab 10
(15)	Review, catch up	Lab 11
(16)	<b>Final Exam: Monday, May 13, 8:00 – 10:00 am</b>	