

University of Wisconsin – Stevens Point
Dept. of Physics and Astronomy
Applied Principles of Physics II– PHYS 202
Fall 2017

Course Information

- **Course title:** Applied Principles of Physics II
- **Course number:** PHYS 202
- **Prerequisites:** PHYS 201 or equivalent.
- **Instructor:** Maryam Farzaneh
- **Contact:** B105 Science Building, x--2423, mfarzane@uwsp.edu
- **Office hours:** TWRf: 10:00 am – 11:00 am
W: 2:00 pm – 3:00 pm

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.

- **Class times**
 - **Lecture (SCI-A107):** Tuesdays & Thursdays 8:00 – 8:50 am
 - **Laboratory (SCI-B112):** Mondays, 10:00 am – 12:50 pm

Course Description

This course is designed to introduce you to the basic concepts of electricity, magnetism, electromagnetic waves and optics. We will become familiar with electric charges, electric field, basic circuits, magnetism and magnetic field, magnetic induction, and physics of light (optics). Even though you may not pursue physics as a career, the lessons learned from studying physics are numerous --- it will sharpen your reasoning ability; you will become confident in abstract thought as well as quantitative analysis and critical thinking.

Course Objectives

1. Understand the fundamental concepts of electricity, magnetism and optics.
2. Apply these concepts to explain everyday phenomena.
3. Use theoretical concepts to make quantitative predictions and verify them by making measurements in the lab.

Required Material

- **Textbook:** *Physics*, James S. Walker, 5th edition, Addison Wesley (Available at Text Rental)
- **Calculator:** Please have a scientific calculator handy. A cell phone is *not* a scientific calculator.
- **Clickers:** You will use clickers in the class to answer in-class questions. You are required to lease a clicker for \$8 for the semester. This semester lease fee will be automatically added to your UWSP student bill. **You will need your UWSP Student ID to lease a clicker.** Clickers are available through UWSP's Help Desk, located in the basement of the library, Room 027. For hours, please check: <http://www.uwsp.edu/infotech/Pages/HelpDesk/default.aspx>. Your clicker may be used in any class that requires clickers for the semester.

Returning clickers: Clickers must be returned to the UWSP's IT Help Desk before the end of finals. Students with unreturned clickers will be billed a late fee and/or may be billed the replacement cost of the clicker.

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. If PowerPoint slides are used during the lecture, I will post them on D2L right after the class, along with clicker questions and their answers. We will use clickers to answer multiple choice questions during most of the lectures. Entering a response for in-class clicker questions would go toward your participation grade which will count for 7% of your overall grade.

Homework

You will have one homework assignment per week. We will use the first hour of each lab on Monday as a discussion session. In that hour you will start working on your homework problem sets in groups or individually. You typically have one week to finish your homework. **Homeworks are due on the day of your lab (Monday), at the beginning of the class.** Your homework grade is based on the completion of the assignment and the score from a few (typically four) randomly graded problems. I will post the solutions to the entire homework assignment on D2L right after the date the assignment is due. Therefore, no late homeworks are accepted. Your homework grade will count for 15% of your overall grade.

Laboratory

Once a week, you will work in groups of three or four and carry on experiments, which are designed to enhance your understanding of the concepts and topics learned in class. There is no lab manual for this course. I will post the lab handouts on D2L in advance and will provide you with hard copies before the lab starts. It is recommended that you read over the lab write-up prior to coming to the laboratory. Every student should expect to be **actively** participating in the laboratory. The lab report (usually one per each group) is typically due at the end of the lab period. Your lab grade will count for 13% of your overall grade.

Important note: Since this course satisfies a lab requirement, it is necessary to pass the lab portion *alone* in order to pass the course. In other words, if your lab average is below 60%, you fail the course regardless of your homework and exam grades.

Exams

There will be *three* midterm exams during the semester, not counting your final exam. These exams will be held **during lab periods in weeks 4, 8, and 12 (please see the course schedule)**, and will be two - three-hour long. Each midterm counts for 15% of your grade. The final exam is partially cumulative and is scheduled for **Monday, December 18, 8:00 - 10:00 am**. It counts for another 20% of your grade. Overall, your exams comprise 65% of your grade.

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 and Assistive Technology Center on the 6th floor of Albertson Hall (library) as soon as possible. DATC can be reached at 715-346-3365 or DATC@uwsp.edu.

- **Academic misconduct**

As a student at UWSP, I expect you to be familiar with the following document: <http://www3.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>, especially Section 14.03. 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 University policy.

- Food and drinks are absolutely **not** permitted in the laboratory. No exceptions.
- **Since texting and cell phone use create distraction both for me as your instructor and your classmates, they are not allowed in the classrooms and in the laboratory. All cell phones should be turned off or silenced during the class and kept in your bags. No cell phone should remain in your pockets or on your desk.**
If I see a student texting in class, I will ask him/her to leave the classroom or the lab for the remainder of the class or lab period.
- In some special circumstances, individual make up labs may be accommodated. Make-up exams will only be offered in case of an excused absence (please see the next item).
- Make-up work will only be accepted in the case of excused absences. Excused absences include death in the immediate family, illness with a note from the appropriate health care professional, religious observance, an event in which you officially represent the University of Wisconsin-Stevens Point and the event directly conflicts with an exam or lab. Excused absences must be approved with documenting materials prior to the date of absence.
- If you are a student-athlete and encounter a time conflict with a lab or an exam because you have to be away for a sport competition, please make sure to approach me about the make-up exam or lab in advance **with a note from your coach**.
- I will drop the lowest lab score. *All* the homework assignments and exams count. If you miss any exam, you will receive a zero for that exam.

- The schedule for the final exam is set by the University. I will not schedule an early final exam for whatever reason.
- **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.

Grading and Evaluation

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

Homework	15%
Participation (clickers)	7%
Laboratory	13%
Exams (3 midterms, 15% each)	45%
Final exam	20%

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. **A score of 86.5% will be rounded to 86% not 87%.**

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	Date	Chapter and Topic	Lab
(1)	Sept 5 (T) Sept 7 (R)	(19) Electric Charges, Insulators and Conductors (19) Coulomb's Law	No Lab (Labor Day)
(2)	Sept 12(T) Sept 14 (R)	(19) Electric Field (19) Electric Forces and Field, Examples	Lab 1: Electrostatics
(3)	Sept 19 (T) Sept 21 (R)	(20) Electric Potential Energy (20) Electric Potential	Lab 2: DC Circuits I
(4)	Sept 26 (T) Sept 28 (R)	(20) Capacitors (20) Electric Energy Storage	Exam 1 in lab

(5)	Oct 3 (T) Oct 5 (R)	(21) Electric Current, Resistance (21) Ohm's Law	Lab 3: DC Circuits II
(6)	Oct 10 (T) Oct 12 (R)	(21) Energy and Power in Electric Circuits (21) Series and Parallel Circuits	Lab 4: Ohm's Law
(7)	Oct 17 (T) Oct 19 (R)	(22) Magnetic Field (22) Magnetic Force on Moving Charges	Lab 5: Electrical Power and Energy
(8)	Oct 24 (T) Oct 26 (R)	(22) Charged Particles in Magnetic Field (22) Magnetic Force on Current Carrying Wire	Exam 2 in lab
(9)	Oct 31 (T) Nov 2 (R)	(23) Induced emf, Magnetic Flux (23) Faraday's Law, Lenz's Law	Lab 6: Solar Cells
(10)	Nov 7 (T) Nov 9 (R)	(23) Energy, Generators and Motors (23) Generators and Motors	Lab 7: RC Circuits
(11)	Nov 14 (T) Nov 16 (R)	(25) Electromagnetic Waves (25) Electromagnetic Waves and Spectrum	Lab 8: Electromagnetic Induction
(12)	Nov 21 (T) Nov 22 (R)	(26) Reflection of Light, Plane Mirrors Thanksgiving Break, No Class	Exam 3 in lab
(13)	Nov 28 (T) Nov 30 (R)	(26) Spherical Mirrors, Ray Diagrams (26) Refraction of Light, Snell's Law	Lab 9: Method of Parallax and Ray Tracing
(14)	Dec 5 (T) Dec 7 (R)	(26) Lenses, Ray Diagrams (26) Dispersion and the Rainbow	Lab 10: Concave Mirrors
(15)	Dec 12 (T) Dec 14 (R)	(27) Optical Instruments, Human Eye (27) Examples, Review	Lab 11: Lenses
(16)		Final Exam: Monday, December 18, 8:00 - 10:00 am, A107	