

University of Wisconsin – Stevens Point
Department of Physics and Astronomy
Applied Principles of Physics I– PHYS 201
Fall 2018

Course Information

- **Course title:** Applied Principles of Physics I
- **Course number:** PHYS 201
- **Instructor:** Maryam Farzaneh
- **Contact:** B105 Science Building, x--2423, mfarzane@uwsp.edu
- **Office hours:** Tuesday: 10:00 – 11:00 am
Wednesday, Thursday, Friday: 11:00 am– 12:00 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):** Tuesday & Thursday 9:00 – 9:50 am
 - **Discussion (SCI- A106):**
 - Section 1: Tuesday 11:00 – 11:50 am
 - Section 2: Wednesday 12:00 – 12:50 pm
 - **Laboratory (SCI-B104):**
 - Section 1: Mondays 2:00 – 4:50 pm
 - Section 2: Tuesdays 2:00 – 4:50 pm

Course Description

This course is designed to introduce you to the basic concepts of physics of motion. We will explore topics in kinematics and dynamics and become familiar with the concepts of velocity, acceleration, force, mass, work and energy. We will also explore fluids at rest and in flow. 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 physics of motion.
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).
- **PHYS 201 Lab Manual:** Available at Text Rental.
- **Calculator:** Please have a scientific calculator handy. A cell phone is *not* a scientific calculator.
- **Clickers:** This class uses “**Turning Point Cloud**” to do interactive polling. This is the list of things you need to do regarding clickers:
 1. You will need to purchase a **Turning Technologies Code** from the bookstore.
 2. You will need to check out a clicker from the **UWSP IT Service Desk in room 108a ALB**, (UWSP Library-1st floor). Device checkout is **free of charge**; however, you will need your UWSP Student ID to get your clicker.

For Service Desk hours, please

visit <http://www.uwsp.edu/infotech/Pages/HelpDesk/default.aspx>

Please note that the clickers must be returned to IT Service 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.

3. You will need to create a **Turning Technologies account** in order to register your device to the class. Please use your UWSP email address to create an account here:
<https://account.turningtechnologies.com/account/>

You can find help with Turning Point Cloud here:

<https://www.turningtechnologies.com/support/turningpoint-cloud>

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.

Discussion

Discussion sections are 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 and will then distribute a problem set which also includes 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 extension of your discussion problem set (see above) and are handed out in the discussion class. You typically have one week to work on your homework. **Each homework is due on the day of your discussion, 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 out experiments that are designed to enhance your understanding of the concepts and topics learned in class. Please purchase a PHYS 201 Lab Manual from the Text Rentals and bring it with you to the lab. 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 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 to three-hour long. Each midterm counts for 15% of your grade. The final exam is partially cumulative and is scheduled for **Thursday, December 20, 2:45-4:45 pm**. It counts for another 15% of your grade. Overall, your exams comprise 60% 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 (lecture and discussion) 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.**
- Typically you can only make up labs if you attend another section of the lab. Please make sure to notify me of the section switch in advance. 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 an exam because you have to be away for a sport competition, please make sure to approach me about the make-up lab or exam 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%
Discussion participation	5%
Laboratory	13%
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.

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 4 (T)	(1) Introduction, Unit conversion	Sec 1: NO LAB (Labor Day)
	Sept 6 (R)	(1) Distance, displacement, speed, velocity	Sec 2: Lab1: Introduction and error analysis
(2)	Sept 11 (T)	(2) Motion with uniform velocity	Sec 1: Lab1: Introduction and error analysis
	Sept 13 (R)	(2) Motion with constant acceleration	Sec 2: Lab 2: Motion with constant acceleration
(3)	Sept 18 (T)	(2) Free fall	Sec 1: Lab 2: Motion with constant acceleration
	Sept 20 (R)	(2) Free fall	Sec 2: Lab 3: Free fall
(4)	Sept 25 (T)	(3) Vector addition: Graphical method	Exam 1 in lab
	Sept 27 (R)	(3) Vector addition: Components method	

(5)	Oct 2 (T)	(5) Force, Net force	Sec 1: Lab 3: Free fall
	Oct 4 (R)	(5) Newton's 1 st law, Newton's 2nd law	Sec 2: Lab 4: Vector addition
(6)	Oct 9 (T)	(5) Newton's 3rd law, mass, Free body diagrams	Sec 1: Lab 4: Vector addition
	Oct 11 (R)	(5) Normal force, Apparent weight	Sec 2: Lab 5: Mass and acceleration
(7)	Oct 16 (T)	(6) Inclined planes	Sec 1: Lab 5: Mass and acceleration
	Oct 18 (R)	(6) Kinetic friction, Static friction	Sec 2: Lab 6: Forces in jumping
(8)	Oct 23 (T)	(6) Static friction contd.	Exam 2 in lab
	Oct 25 (R)	(6) Circular motion	
(9)	Oct 30 (T)	(7) Circular motion, contd.	Sec 1: Lab 6: Forces in jumping
	Nov 1 (R)	(7) Work, Kinetic energy	Sec 2: Lab 7: Friction
(10)	Nov 6 (T)	(7) Kinetic energy examples, Power	Sec 1: Lab 7: Friction
	Nov 8 (R)	(8) Gravitational potential energy	Sec 2: Lab 8: Circular motion
(11)	Nov 13 (T)	(8) Potential energy	Sec 1: Lab 8: Circular motion
	Nov 15 (R)	(8) Conservation of mechanical energy	Sec 2: Lab 9: Work done by a force
(12)	Nov 20 (T)	(15) Fluids: density, pressure	Exam 3 in lab
	Nov 22 (R)	THANKSGIVING BREAK, NO CLASS	
(13)	Nov 27 (T)	(15) Change of pressure with height	Sec 1: Lab 9: Work done by a force
	Nov 29 (R)	(15) Archimedes' principle, buoyancy	Sec 2: Lab 10: Conservation of Energy
(14)	Dec 4 (T)	(15) Archimedes' principle examples	Sec 1: Lab 10: Conservation of Energy
	Dec 6 (R)	(15) Fluid flow, continuity	Sec 2: Lab 11: Archimedes' principle

(15)	Dec 11 (T) Dec 13 (R)	(15) Bernoulli's equation, examples (15) Review, Q&A	Sec 1: Lab 11: Archimedes' principle Sec 2: NO LAB
(16)		Final Exam: Thursday, December 20 2:45-4:45 pm A107-SCI	