University of Wisconsin – Stevens Point

Dept. of Physics and Astronomy

Applied Principles of Physics I– PHYS 201

Spring 2017

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:** MR: 2:00 pm – 3:00 pm
  TR: 11:00 am – 12:00 pm
  W: 10:00 am – 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.

- **Class times**

  - Lecture (SCI-D101): Tuesdays & Thursdays 8:00 – 8:50 am

  - Discussion (SCI- A106):

Section 1:	Wednesday	11:00 – 11:50 am
Section 2:	Wednesday	12:00 – 12:50 pm
Section 3:	Monday	12:00 – 12:50 pm
Section 4:	Monday	1:00 – 1:50 pm

  - Laboratory (SCI-B104):

Section 1:	Thursdays	10:00 am – 12:50 pm (**Taught by Prof. Arthur Stevenson**)
Section 2:	Fridays	11:00 am – 1:50 pm
Section 3:	Mondays	3:00 – 5:50 pm (**Taught by Prof. Arthur Stevenson**)
Section 4:	Tuesdays	3:00 – 5:50 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 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:** 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.

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. You 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. Please purchase a PHYS 201 Lab Manual form 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 - three-hour long. Each midterm counts for 15% of your grade. The final exam is partially cumulative and is scheduled for **Thursday, May 18th 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**

  If you are a student who has a disability and is in need of classroom and/or exam accommodations, please contact the instructor and the Disability& Assistive Technology Center (715-346-3365).

- **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 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. **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)	Jan 24 (T) Jan 26 (R)	(1) Introduction, Unit conversion (1) Distance, displacement, speed, velocity	Lab1: Introduction and error analysis
(2)	Jan 31(T) Feb 2 (R)	(2) Motion with uniform velocity (2) Motion with constant acceleration	Lab 2: Motion with constant acceleration
(3)	Feb 7 (T) Feb 9 (R)	(2) Free fall (2) Free fall	Lab 3: Free fall
(4)	Feb 14 (T) Feb 16 (R)	(3) Vector addition: Graphical method (3) Vector addition: Components method	**Exam 1 in lab**
(5)	Feb 21 (T) Feb 23 (R)	(5) Force and mass, Net force (5) Newton's 1st law, Newton's 2nd law	Lab 4: Vector addition
(6)	Feb 28 (T) March 2 (R)	(5) Newton's 3rd law, Free body diagrams (5) Normal force, Apparent weight	Lab 5: Mass and acceleration
(7)	March 7 (T) March 9 (R)	(6) Inclined planes, frictional forces (6) Kinetic friction	Lab 6: Forces in jumping
(8)	March 14 (T) March 16 (R)	(7) Static friction (7) Circular motion	**Exam 2 in lab**
SPRING BREAK **NO CLASS!**			
(9)	March 28 (T) March 30 (R)	(7, 8) Circular motion, Work (8) Kinetic energy	Lab 7: Friction
(10)	April 4 (T) April 6 (R)	(8) Power, Potential energy (8) Gravitational and elastic potential energies	Lab 8: Circular motion

(11)	April 10 (T) April 13 (R)	(8) Conservation of mechanical energy (8) Conservation of mechanical energy	Lab 9: Work done by a force
(12)	April 18 (T) April 20 (R)	(15) Fluids: density, pressure (15) Change of pressure with height	**Exam 3 in lab**
(13)	April 25 (T) April 27 (R)	(15) Archimedes' principle, buoyancy (15) Archimedes' principle, examples	Lab 10: Conservation of Energy
(14)	May 2 (T) May 4 (R)	(15) Fluid flow, continuity (15) Bernoulli's equation	Lab 11: Archimedes' principle
(15)	May 9 (T) May 11 (R)	(15) Bernoulli's equation, examples (15) Review	**NO LAB**
(16)		**Final Exam: Thursday, May 18** **2:45 pm– 4:45 pm** **D101**	