

Physics 203, 2020 Fall

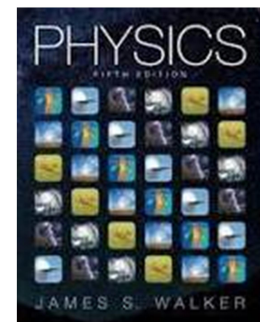
Palash Banerjee, Dept. of Physics, UW-Stevens Point

1 Basic information

Course title	Physic 203, College Physics I
Instructor	Palash Banerjee, with Prof. Hinaus teaching Lab Section 1.
Contact	B201 Science, palash.banerjee@uwsp.edu
Office hours	On Zoom by appointment.
Zoom link	https://uwsp.zoom.us/j/93790345724?pwd=TTczdkc3aHpPV0lHTS9GUlcrenpUQT09
Textbook	"Physics" by Walker.
Pre-requisite	some knowledge of algebra and trigonometry.

2 Course description

Physics 203 is an introductory course in physics and deals with the study of mechanics. I will spend time discussing a limited number of fundamental topics but in greater conceptual depth. These fundamental physics topics find numerous applications in the study of living organisms and the natural world. I hope that by studying these topics you will develop a deeper and sharper understanding of *why* the world around you works the way it does.



3 Teaching style

I believe that fewer topics presented carefully and discussed in substantial depth is better for your training as junior scientists. I also believe that everyone learns differently and I promise to present the same material several different ways to make it work for *you*.

4 Learning outcomes

The assignments in this course support the following learning outcomes:

1. One learning outcome is that you should learn some physics and show us you can make scientific arguments with the proper conceptual and analytical reasoning. You will demonstrate this learning by solving different types of problems and submitting a neatly written account of your work.
2. A second learning outcome is that you should be able to improve your writing skills and learn to write clearly. If you write clearly, you will think clearly and this will sharpen your analytical skills.

5 Course assignments

1. **Video lectures:** Each week I will post about 5 video lectures on a topic. Each video will be brief and no more than about 20 minutes. Please watch these video lectures and take notes as if you were in an in-person classroom. A homework assignment will accompany the video lectures. The homework assignment should help sharpen your focus and is my way of saying “this is what I want you to be able to do after you watch the videos”. I will supplement these videos with some of my own notes. These notes will provide additional examples on those topics.
2. **Zoom meetings:** The Zoom meetings with each section is my attempt to build some in-person interaction into this online class. I will use the lecture and discussion meetings to solve one or two slightly advanced examples that are relevant to your homework. I might also assign you into groups and ask you to get started with the homework in my presence. It would help if you have already watched a few of the videos *before* you attend our Zoom meeting.
3. **Homeworks:** Homework will be assigned with every weekly module and will be due in one week. The homeworks will be based on the lecture videos and my own notes. You may expect approximately twelve homework assignments during the course. Your homeworks count for 30% of your grade and I will drop the lowest homework score. To submit your homework, you can use the OneDrive application on your smart phone to take pictures of each page. The application will merge all the pictures into a single pdf file. You can then upload the pdf file onto Canvas.
4. **Laboratory:** We will have a virtual laboratory this semester using an online tool called Pivot Interactives. Detailed instructions for how to use this tool and perform the assigned work will be provided. Because of the virtual laboratory environment, you will not get to actually perform the experiment but you *will* get to determine what data to acquire, learn some methods of data analysis, and practice writing a brief scientific report. The lab assignment will be due in roughly one week. We will meet with each section once a week on Zoom to provide some guidance and tips on what to do and how to do it. Your laboratory work counts for 20% of your grade and I will drop your lowest score.
5. **Exams:** There will be *two* midterm exams during the semester and one final exam. The first midterm exam will be available on Oct 6 and the second midterm exam will be available on Nov 10. The exams are open notes and you can refer to whatever resources you wish. I only ask that you *not* talk to or otherwise get help from another person. Your written solutions are due within 24 hours on Canvas.

6 Zoom meetings

The schedule for our weekly Zoom meetings is shown in the table below. Each Zoom meeting lasts for one hour. The meeting link is <https://uwsp.zoom.us/j/93790345724?pwd=TTczdkc3aHpPV0lHTS9GUlcrenpUQT09>.

	Lecture	Discussion	Virtual lab
Section 1	Wed 11 am	Tue 1 pm	Thu 11 am
Section 2	Fri 11 am	Tue 3 pm	Mon 2 pm
Section 3	Mon 11 am	Thu 3 pm	Wed 2 pm

7 Grading and evaluation

I will calculate your grade based on a weighted percentage of your scores as shown in the table to the left below. Your final letter grades will be determined as shown in the table to the right below.

Assignment	Value	Total score	Grade
Homeworks	30%	93% and above	A
Virtual lab assignments	20%	90–92%	A-
1st exam	16%	87–89%	B+
2nd exam	16%	83–86%	B
Final exam	18%	80–82%	B-
		77–79%	C+
		73–76%	C
		70–72%	C-
		67–69%	D+
		60–66%	D
		below 60%	F

I do *not* grade on a curve. Scores will be rounded up according to the following example: 86.6 – 86.9% will be rounded up to 87% and become a B+, but 86.0 – 86.5% will remain at 86% and will earn a B.

8 Other course policies

1. If you are going to be late on an assignment, please let me know.
2. I will drop the lowest homework score and the lowest lab score. *All* the exams count.
3. The dates for the final exam are set by the University. It will be very difficult for me to have anyone take an early final exam.
4. I do not assign work for extra credit.
5. Once you hand in your final exam, there is nothing more you can do to change your grade.

9 Course schedule

The course schedule is listed in the table below. I will try my best to follow the schedule but I reserve the right to make changes.

Week	Chapter: Topic	Laboratory
(1) Sep 2	Ch 2: We meet one dimensional motion and learn to draw motion diagrams.	No lab activity
(2) Sep 6	Ch 2: We meet velocity and acceleration and learn some analytical methods.	Lab 1
(3) Sep 13	Ch 3: We become best friends with vectors.	Lab 2
(4) Sep 20	Ch 3: We discover frames of reference and encounter Galilean relativity.	Lab 3
(5) Sep 27	Ch 5: We meet Newton's Laws and learn to draw force diagrams.	Lab 4
(6) Oct 4	Ch 6: We begin to apply Newton's Laws and realize that with great power comes great responsibility. Mid term exam 1, available Oct 6, due Oct 7 by 5 pm .	No lab activity.
(7) Oct 11	Ch 6: We continue with several applications of Newton's Laws.	Lab 5
(8) Oct 18	Ch 7: We meet the work done by a force and learn about kinetic energy.	Lab 6
(9) Oct 25	Ch 8: We meet the mysterious potential energy function and learn about conserved quantities.	Lab 7
(10) Nov 1	Ch 9: We discover linear momentum, study the theory of collisions, and learn some rocket science.	Lab 8
(11) Nov 8	Ch 10: We learn how to describe the behavior of an extended object. Mid term exam 2, available Nov 10, due Nov 11 by 5 pm .	No lab activity.
(12) Nov 15	Ch 11: We study the balance and stability of an extended object.	Lab 9
(13) Nov 22	Ch 11: We apply the conditions of stability to solve some problems in human biomechanics.	No lab activity.
(14) Nov 29	Ch 15: We study fluid statics and discover buoyant forces.	Lab 10
(15) Dec 6	We catch up and review and decide we love physics after all.	Lab 11
(16) Dec 13	Final exam, available Tue Dec 15 at 8 am, due by 5 pm.	