

PHY 1020/1090 General Physics II
CRN: 11950 & 11951
Winter 2021, MWF 8:00 – 9:07am
Classroom: online

webAssign Access

Registration

1. Go to www.webassign.net and click on “I have a class key”
2. Enter the (case sensitive) class key **TBD**
3. Select your login name and enter the required information
4. Click on “Create my account”
 - a. A review screen appears with your information. **PRINT AND KEEP A COPY FOR YOUR RECORDS**
5. After login you will need to enter the webAssign access code
 - a. It is on the card inside the book (or purchased separately)
 - b. There is a 14 day grace period where you don't need the code

Homework Access

1. Log into webAssign www.webassign.net/login.html
 2. Click on “My Assignments”
- NOTE: Clicking on “Save Work” will not submit your work for grading. Make sure you click on “Submit” when you finish your work. There is a maximum of 3 submissions for each problem.

Take-Home Quizzes

10 take home quizzes will be given out over the course of the semester (see lecture schedule below). The quizzes will consist of a few short problems and will be **DUE THE FOLLOWING CLASS MEETING**. The quizzes and answer keys will be on Moodle. You will only have to do five (5) of these. You may do up to 6 quizzes and I will base your grade on the best 5 scores.

Late quizzes cannot be accepted.

Labs

PHY 1020 students are required to enroll in a separate laboratory section. The instructor does not participate in the lab, so please refer all lab questions to your lab instructor.

Exams

Three exams will be given over the course of the semester.

Exam 1	February 15, 2021	8:00 – 9:07 AM
Exam 2	March 26, 2021	8:00 – 9:07 AM
Final Exam	April 26, 2021	9:30 – 11:00 AM

Missing an exam will require a note from a physician or from the military detailing the reason for absence.

You are encouraged to make a page of notes and equations to use with each exam. I will be reviewing the equations and course material before the exams.

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<i>Course Grade</i>	webAssign Homework	12% of your grade
	Take home quizzes	10% of your grade
	3 Exams	26% of your grade, each

Overall Percent Grade	Letter Grade	Numeric GPA Equivalent
≥95%	A	4.0
92%	A-	3.7
88%	B+	3.3
85%	B	3.0
80.5%	B-	2.7
74.5%	C+	2.3
70%	C	2.0
67%	C-	1.7
63%	D+	1.3
60%	D	1.0
<60%	F	0.0

Supplemental Instruction

Supplemental instruction is a group tutor service offered by the Academic Skills Center. You do not have to attend, but you are encouraged to do so.

Meeting Times:	MW 9:20 – 10:20 AM
Classroom:	Online

About the Course

Course (Catalog) Description

Electricity and magnetism, light, relativity, atomic and nuclear physics. Satisfies the university general education requirement in the knowledge applications integration area. Prerequisite for knowledge applications integration: completion of the general education requirement in the natural science and technology knowledge exploration area.

General Education Learning Outcomes

This course satisfies the university general education requirement in the natural science and technology (NST) knowledge exploration area.

The learning outcomes for NST courses state that the student will demonstrate:

Knowledge of major concepts from natural science or technology, including developing and testing of hypotheses, drawing conclusions; and reporting of findings and some laboratory experience or an effective substitute.

How to evaluate sources of information in science and technology.

Course Goals and Objectives

As a mathematical science, physics involves a great deal of calculation. Just as important, the science of physics involves thinking critically, setting up the problem to be solved, discovering what aspects of the problem are important and which are negligible, and recognizing how a particular problem fits into a larger framework of laws that govern the universe. To that end, over the course of the semester we will learn about

Electric and magnetic fields	Wave-particle duality
Capacitors and resistors	Optics
Simple electrical circuits	Quantum mechanics
Light	Atoms and the Periodic Table
	Radiation and nuclear decay

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Academic Conduct Policy

Please consult the university's detailed policy for misconduct (cheating, plagiarism, falsifying data, cybercrime, etc.). This policy will be strictly followed, with no exceptions. Consequences include expulsion from the university.

Add/Drops

It is your responsibility to make sure that you have filled out all necessary materials to be enrolled in the course. Further, it is your responsibility to make sure that you have filled out all necessary materials to drop the course and that you have done so by the deadlines specified by the university. Please contact the registrar if you are uncertain about adding or dropping a course.

Special Considerations

University policy is to make accommodations for individuals with disabilities. Please inform me of the need for accommodation within the first week of class.

Privacy

Student performance and grades are considered private and only to be discussed between the instructor, the student, and the university. The instructor, the department, and the university are prohibited from releasing a student's grade to anyone but the student.

Tentative Schedule

<u>Day</u>	<u>Date</u>	<u>Chapter</u>
W	1/6	<i>Introduction and Syllabus</i>
F	1/8	Vectors & Unit Vectors Review
M	1/11	Vectors & Unit Vectors Review
W	1/13	Ch 15 – Electric Forces and Electric Fields
F	1/15	* Ch 15 – Electric Forces and Electric Fields
M	1/18	<i>Martin Luther King, Jr. Day; No class meeting</i>
W	1/20	Ch 15 – Electric Forces and Electric Fields
F	1/22	* Ch 15 – Electric Forces and Electric Fields
M	1/25	Ch 16 – Electrical Energy and Capacitance
W	1/27	Ch 16 – Electrical Energy and Capacitance
F	1/29	* Ch 16 – Electrical Energy and Capacitance
M	2/1	Ch 17 – Current and Resistance
W	2/3	Ch 18 – Direct Current Circuits
F	2/5	* Ch 18 – Direct-Current Circuits
M	2/8	Ch 18 – Direct-Current Circuits
W	2/10	Catchup Day
F	2/12	* Review
M	2/15	EXAM 1 (Chs 15 – 18 only)
W	2/17	Ch 19 – Magnetism
F	2/19	Ch 19 – Magnetism

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Winter Recess

M	3/1		Ch 20 – Induced Voltages and Inductance
W	3/3		Cardiac Electrophysiology and the EKG**
F	3/5	*	Ch 21 – Electromagnetic Waves (Section 21.8 – 21.13 Only)
M	3/8		Ch 21 – Electromagnetic Waves (Section 21.8 – 21.13 Only)
W	3/10		Ch 22 – Reflection and Refraction of Light
F	3/12	*	Ch 22 – Reflection and Refraction of Light
M	3/15		Ch 24 – Wave Optics
W	3/17		Ch 24 – Wave Optics
F	3/19	*	Ch 24 – Wave Optics; Ch 25 – Optical Instruments (Section 25.6 Only)
M	3/22		Malus’s Law (short lecture from Chapter 24)
W	3/24		Review
F	3/26		EXAM 2 (Chs 19 – 22, and 24 only)
M	3/29		Ch 27 – Quantum Mechanics
W	3/31		Ch 27 – Quantum Mechanics
F	4/2	*	Ch 27 – Quantum Mechanics
M	4/5		Ch 29 – Nuclear Physics / Ch 30 – Nuclear Energy (Section 30.1 – 30.4 Only)
W	4/7		Ch 29/30 Nuclear Physics/ Nuclear Energy
F	4/9	*	Ch 29/30 Nuclear Physics/ Nuclear Energy
M	4/12		Ch 29/30 Nuclear Physics/ Nuclear Energy
W	4/14		Ch 29/30 Nuclear Physics/ Nuclear Energy
F	4/16		Climate Science Demo**
M	4/19		Review

*A take home quiz is distributed today, and is due the following Monday.

**Optional to view these lectures. They will not be specifically covered on the exams.

M 4/26 9:30 – 11:00 AM FINAL EXAM (Chs 24, 25.6, 27 & 29, and Sec 30.1 – 30.4 only)

Note: The Academic Calendar says the final exam will be 8 – 11 PM; however, because the final is not cumulative and is equally weighted with the other exams, I want it to be about the same duration. So the final exam will be 9:30 – 11:00 AM.

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Notes about the Class

What about Chapter 23: Mirrors and Lenses?

If you are enrolled in PHY 1020, you will complete a lab involving lenses, so you should maybe give a quick read through of the chapter before that lab. If you are a pre-med, it's safe to say the MCAT will have something on lenses or microscopes, so I would recommend going through this chapter before your test and while you are still in a physics frame of mind.

I'm a pre-med. Is this all I need to know for the MCAT?

Probably not. Physics covers topics from how planets move to why atoms exist. It is impossible to cover all there is to know about physics, or even all that is medically relevant in an introductory course. I'll try to point out, when I can, how certain concepts are important in biomedical science to help you focus your study. I know it's important, but please don't get caught up on studying for a standardized test; you're planning to be a doctor, so you're supposed to actually learn this stuff too.

How do I know if I'm keeping up?

- By the end of each week you should be able to
 - do all of the example problems in the text,
 - do all of the homework problems, and
 - do the problems in the take home quizzes (even if you chose to skip that week's take home quiz)up to and including the chapters we covered that week. Exam problems will be very much like these problems.

- If problems are taking you hours each to complete, you are struggling. In some cases a problem should take as little as 2 minutes to complete. In other cases it might take you 15 minutes. Keep in mind I will be asking you to do several problems in class during the one-hour exams, so these problems are not designed to take an hour each to complete.

What can I do to improve?

- Be organized. webAssign will only ask you for an answer, so keep a notebook with your work in it. Make sure it's neatly written so you can go back and follow your thought process. Write notes to yourself in your work. If you have to keep going back in the chapter to look up a formula or a concept, write that down with your work; and keep writing it down until you commit it to memory. And PLEASE WRITE NEATLY! I can't tell you where you're going wrong with a problem if I can't read your work.

- Even though the in-text examples are worked out for you, try and work them out again without looking at the answer. Even though you already earned your homework points, do the webAssign problems again. The mathematical sciences (math and physics), unlike many other disciplines, are best learned by practice and NOT rote memorization.

- Pay particular attention to problems you are struggling with. It makes little sense to practice problems that you already fully understand.

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- You are the best judge of where you need help. When you seek assistance, try to at least identify the section of the text that you are finding difficult. This can help narrow down where the problem is.
- **IMPORTANTLY**, never wait until several chapters have gone by before you seek help. Physics and math build upon earlier topics to discuss more advanced topics. If you are a little lost in chapter 15, you will be very lost by the time we get to chapter 20.
- As you complete problems, it will be helpful if you would think about how you would phrase a similar but different problem. What information would you have to give to ask someone to solve for a particular quantity? If you can ask the problem, you can probably answer it.
- Because this is a non-calculus based section, we won't do too much with deriving equations. Many of the problems will ask you to take an equation involving several variables, plug in the quantities that you know/are given, and then solve for the unknown quantity. Because most of you do not have a calculus background, you likely do not have significant practice with mathematics courses. I strongly encourage you to review order of operations, how to solve an equation for the unknown quantity, basic geometry, trigonometry, vectors, and how to cancel units of measurement in a formula.
- Some of the most common mistakes students make in introductory physics classes involve the misuse of their calculators. Again, review order of operations, make generous use of parentheses with your calculator, and make sure your calculator is in degree or radian mode when you need it to be in degree or radian mode. Sine of 25 degrees is very different than sine of 25 radians!

Also...

- Please check the syllabus and Moodle to see if your question has already been answered before you email your instructor.
- Office hours are office hours, not private tutoring. Please be mindful of the need of other students for my attention.
- Email me directly. Do not use Moodle or webAssign to send me messages.
- Read your email!