

General Physics II

PHY-170 & PHY-172

Spring 2020

Instructor: Paul Saulnier

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Textbook: *Principles of Physics (a calculus-based text)*, Serway & Jewett, Fifth Edition (Same as as was used for General Physics I)

Course Policy and Evaluation

1. **Objectives:** It is hoped that when students have completed this course they will have learned some problem solving skills, some computer and calculation skills, some quantitative and empirical reasoning skills, and, of course, some physics.
2. **Expectations:** Students in this class are expected to have a solid background in algebra, trigonometry (or pre-calculus), and for those in the PHY-172 at least one semester of calculus. The instructor will discuss the calculus involved in this course as necessary, but it is important that students also see it in another course setting. In addition, **students should be familiar with topics from the first semester of general physics, including vectors, forces, kinematics, and energy.** Finally, all students are required to be concurrently enrolled in **PHY-171: General Physics II Laboratory.**
3. **Learning Styles:** Recognizing that students learn science in a variety of ways, the instructor will take advantage of many different techniques, including collaborative learning, to maximize the overall effectiveness of this course. Although collaborative efforts will be encouraged for solving in-class problems, you are expected to mainly work on your own for assigned homework. No collaboration is allowed for exams.

Please realize that this is a challenging course to teach as it targets both calculus and non-calculus students. I will strive to keep my lectures relevant for both sections but **there will be times where I will have to show calculus proofs and provide calculus problems in-class as examples.** During these I will make every attempt to show the non-calculus students what they can get out of the proof or example.

4. **Class Meetings and Reading Assignments:** The class will meet five days a week (M-F) from 8:00-8:50 a.m. for lecture, discussion, problem solving, group work, and exams. It is assumed that students will read the relevant chapters in a timely fashion. **Please be on time for class.**
5. **Homework:** Problems will be assigned on an approximately weekly basis and will be promptly graded and returned to the student. Late homework will be accepted only at the discretion of the instructor with loss of points (may only be accepted for a valid reason).

Homework problems will come out of the back of relevant chapters in the course textbook and will range from trivial plug-and-chug questions (“black” problems) to those that will require more thought and likely some new derivation (“red” problems). **I am very well aware that it is easy to find solutions online for the textbook that we are using and will point you to the Academic Honesty section below.** While I do not mind if you work together with other students on the homework, your written solutions must be your own. It is easy to recognize when problems have been copied or solutions have been used (as many online solutions contain errors which are copied and not recognized) and I will not hesitate to give zeros on assignments and related exams if necessary.

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6. **Group Activities:** A number of group activities will be done throughout the semester. This allows for additional exploration of problems and encourages collaborative learning.
7. **Academic Honesty:** You are expected to live up to the high expectations that the college sets regarding academic honesty (see the college's honor code below). By writing your name on any graded assignment for this class, you are attesting to the fact that it has been completed in accord with the highest standards of academic honesty. I take this responsibility seriously and I expect that you will also. If you have any doubt about what constitutes appropriate use of someone else's work, please ask. Any student found in violation of these policies will be dealt with appropriately.
8. **Attendance:** While you are technically not required to attend lecture and I will not ask you to sign-in, regular attendance at all lectures is expected and excessive absenteeism will result in reduction of your final grade.
9. **Exams:** There will be four one-hour exams and a two-hour final exam as scheduled below. Exams will be closed book.
10. **Missed Exams:** Students are expected to arrange in advance to take an exam at other than the announced time. These requests will be considered on an individual basis (a valid reason is necessary). Students should not expect that such permission will automatically be granted. Permission to make up a missed exam after the fact will be at the discretion of the instructor.
11. **Incomplete:** A grade of incomplete will be given only for work not completed due to circumstances beyond the control of the student (typically this is due to an emergency situation).
12. **Physics Tutors:** Tutoring for this course is run by undergraduate physics majors and occurs Sunday through Thursday from 7-10 pm in Olin Hall 216.
13. **Office Hours:** My formal scheduled office hours are M-F 9-10 a.m. In general, if you want to stop in and you see me in my office, feel free to ask for help. I just ask that you avoid the ½ hour before any of my classes or labs. The **best way** to meet with me outside of formal office hours is to send me an email ahead of time as I check my email regularly.
14. **Email:** You may contact me via e-mail: PSAUL@GUSTAVUS.EDU. I will respond as soon as I can.
15. **Evaluation:**

Four hour Exams	60%	A	94 - 100	C+	74 - 78
Final Exam	20%	A-	90 - 94	C	70 - 74
Homework	15%	B+	86 - 90	C-	66 - 70
Group Problems	5%	B	82 - 86	D+	62 - 66
		B-	78 - 82	D	58 - 62
		F	< 58		

Assignment of final letter grades will **also take into account the instructor's subjective evaluation** of the student's attendance, initiative, class participation, preparation (particularly the quality of homework assignments and exams), and evidence of improvement.

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16. **Teaching Licensure:** This course fulfills some of the standards required for Minnesota teaching licensure. For details, see, http://physics.gac.edu/Education/phy170_standards.htm and http://physics.gac.edu/Education/phy172_standards.htm.

HONOR CODE

As a community of scholars, the faculty and students of Gustavus Adolphus College have formulated an academic honesty policy and honor code system, which is printed in the Academic Bulletin and the Gustavus Guide. As a student at Gustavus Adolphus College I agree to uphold the honor code. This means that I will abide by the academic honesty policy, and abide by decisions of the joint student/faculty Honor Board.

HONOR PLEDGE

On my honor, I pledge that I have not given, received, or tolerated others' use of unauthorized aid in completing this work.

DISABILITY SERVICES

Gustavus Adolphus College is committed to ensuring equitable and inclusive learning environments for all students. If you have a disability and anticipate or experience barriers to equal access, please speak with the accessibility resources staff about your needs. A disability may include mental health, attentional, learning, chronic health, sensory, physical, and/or short-term conditions. When appropriate, staff will guide students and professors in making accommodations to ensure equal access. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact them as early as possible. Accessibility resources staff are located in the Center for Academic Resources and Enhancement (<https://gustavus.edu/care/accessibility/>) (x7227). Accessibility Resources Coordinator, Katy Clay, (clayk@gustavus.edu), can provide further information.

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Course Schedule (Approximate)

<u>Week Beginning</u>	<u>Chapter</u>	<u>Title</u>
February 10th	Chapter 19	Electric Forces and Fields
February 17th	Chapters 19 & 20	Electric Potential and Capacitance
February 24th	Chapters 20 & 21	Current and DC Circuits
March 2nd	Chapter 21 and Exam	RC Circuits and Kirchhoff's Rules
*** Exam 1 ***		
March 9th	Chapter 22	Magnetic Forces and Fields
March 16th	Chapter 23	Faraday's Law and Inductance
March 23rd	Chapter 24 and Exam	Electromagnetic Waves
*** Exam 2 ***		
March 30th	Chapter 25	Reflection and Refraction of Light
April 4th – April 13th	*** Spring Break ***	
April 14th	Chapter 26	Image Formation via Lenses and Mirrors
April 20th	Chapter 27 and Exam	Wave Optics
*** Exam 3 ***		
April 27th	Chapter 28	Quantum Physics
May 4th	Chapter 29	Atomic Physics
May 11th	Chapter 30	Nuclear Physics
May 18th	Chapters 30 and Exam	Fourth Exam and Final Exam Review
*** Exam 4 ***		
May 20th	LAST DAY OF CLASS	
May 22nd	Saturday 1:00 PM – 3:00 PM	*** Final Exam - Comprehensive ***