

# General Physics I

## PHY-120 & PHY-122

Gustavus Adolphus College, Fall 2016

**Instructor:** Dr. Daniel Young

**Office:** Olin Hall 212 x7311 dyoung4@gustavus.edu

**Textbook:** *Principles of Physics (a calculus-based text)*, Serway & Jewett, Fifth Edition

### 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 and trigonometry (or pre-calculus equivalent), and for those in the PHY-122 section, at least one semester of calculus. I will discuss the calculus involved in this course as necessary, but it is important that students also see it in another course setting. Additionally, all students are required to be concurrently enrolled in **PHY-121: General Physics I Laboratory**.
3. **Learning Styles:** Recognizing that students learn science in a variety of ways, I 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 work primarily on your own for assigned homework. No collaboration is allowed for quizzes and exams.

Please realize as well 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 a number of instances 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. **Moodle:** Everything that we do in this class I will post on Moodle. This includes: lecture notes, homework assignments and solutions, group work assignments and solutions, exams and solutions, and your grades (usually on a 1-2 week delay). It is your responsibility to periodically check your grades on Moodle and inform me of any discrepancies.
5. **Class Meetings and Reading Assignments:** The class will meet five days a week (M-F) from 10:30-11:20 in Olin Hall 103 for lecture, discussion, homework review, quizzes, and exams. Exam dates are indicated on the approximate schedule on the last page. You will be responsible for reading the text prior to the class in which relevant instruction will take place. Typically I like to take one day per week and do a group work assignment at the conclusion of each chapter, this will usually happen on Fridays and will be announced the day prior in class.
6. **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. The format in which you choose to turn in your homework is up to you but the harder it is for the graders to follow your reasoning and find your answer, the more points will be taken away. I would suggest that you follow the example on Moodle very closely with regard to showing your steps and clearly indicating your solution.

# General Physics I

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 not that difficult 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, 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.

7. **Group Activities:** A number of group activities will be done throughout the semester, usually occurring during Friday lecture, where students will work together in groups of 2-3 members to cooperatively solve problems. A group solution will be submitted with all group members receiving the same grade. Make-ups for group problems missed due to absence will be handled individually at the discretion of the instructor.
8. **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.
9. **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.
10. **Quizzes:** There may be a few quizzes (both announced and surprise) throughout the semester. If you miss a quiz due to a class absence it is your responsibility to contact the instructor to arrange a make-up time.
11. **Exams:** There will be four one-hour exams and a two-hour final exam as scheduled below. For the one-hour exams you will be allowed a calculator, a pencil, and one side of an 8.5'x11'' piece of paper with whatever notes you would like to write. For the final exam you will be allowed to use your previous note sheets, or you can make a new one; I will also provide you with an equation sheet for the final exam only. Please note that due to the inconvenient timing of the Nobel conference this year, **the exam dates are approximate and may need to be adjusted (plus or minus two days at most) based on the pace of lecture.**

You may listen to music during the exams if you like but once the exam has started you are not allowed to access your phone/iPod/etc. to make any changes. This is a one-strike policy, the first instance I notice of someone using this to gain an unfair advantage will lose the privilege for the entire class.

# General Physics I

12. **Missed Exams:** Students are expected to arrange in advance to take an exam other than during the announced time. These requests will be considered on an individual basis (a valid medical or athletic reason is usually necessary) and 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.
13. **Incomplete:** A grade of incomplete will be given only for work not completed due to circumstances beyond the control of the student.
14. **Physics Tutors:** Tutoring for this course is run by undergraduate physics majors and occurs Sunday through Thursday from 7-10pm in Olin Hall 216. They are willing to help with confusion regarding the conceptualization of material and homework problems.
15. **Office Hours:** My scheduled office hours are T/W/R from 1:30-3:30. I will make every effort to be available during these times for individual assistance and advising. In general, if you want to stop in and you see me in my office, feel free to ask for help. If I'm in the middle of something, I'll suggest some later time.
16. **E-mail:** You may contact me via e-mail to discuss anything on your mind regarding the course: **dyoung4@gustavus.edu**. As I am a fairly new instructor, you are welcome to provide feedback regarding the structure of the course as I will be trying some new things this year. I would prefer that you not ask me homework questions over e-mail as it is difficult to respond when I cannot directly perceive your thought processes; show up to my office instead so we can talk in person. If you send me an e-mail I will respond rapidly (usually within a few hours) but expect that if you send me an e-mail at 9:00pm, I probably won't attend to it until the next morning.
17. **Evaluation:**
- |            |     |    |          |    |         |
|------------|-----|----|----------|----|---------|
| Hour Exams | 40% | A  | 94 - 100 | C+ | 74 - 78 |
| Final Exam | 20% | A- | 90 - 94  | C  | 70 - 74 |
| Homework   | 25% | B+ | 86 - 90  | C- | 66 - 70 |
| Group Work | 15% | 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), and evidence of improvement. Final grades will be rounded to the nearest percentage point.

18. **Teaching Licensure:** This course fulfills some of the standards required for Minnesota teaching licensure. For details, see, [http://physics.gac.edu/Education/phy120\\_standards.htm](http://physics.gac.edu/Education/phy120_standards.htm) and [http://physics.gac.edu/Education/phy122\\_standards.htm](http://physics.gac.edu/Education/phy122_standards.htm).
19. **Change of Registration:** The College's deadline for late registration is Monday, September 19th (the tenth class day). The last day for changing registration between PHY120 and PHY122 is Monday, September 26th (the fifteenth class day.) No petitions for later change of

## **General Physics I**

registration will be endorsed. The last day to withdraw from the course with a "W" is November 11th (the end of the tenth week of the semester).

# General Physics I

## **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 the full participation of all students in its programs. If you have a documented disability (or you think you may have a disability of any nature) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with the Disability Services Coordinator, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Disability Services as early as possible. Disability Services (<https://gustavus.edu/advising/disability/>) is located in the Advising and Counseling Center.

## **HELP FOR STUDENTS WHOSE FIRST LANGUAGE IS NOT ENGLISH**

Support for English Language Learners (ELL) and Multilingual students is available via the College's ELL Support staff person, Andrew Grace ([agrace@gustavus.edu](mailto:agrace@gustavus.edu) or x7395). He can meet with individual students for tutoring in writing, consulting about academic tasks, and helping them connect with the College's support systems. The ELL Support person can also consult with faculty members who have ELL and multilingual students enrolled in their classes. The College's ELL staff person can provide students with a letter to a professor that explains and supports academic accommodations (i.e. additional time on tests, additional revisions for papers). Professors make decisions based on those recommendations at their own discretion. In addition, ELL and multilingual students can seek help from peer tutors in the Writing Center.

# General Physics I

## Course Schedule (Approximate)

<u>Week Beginning</u>	<u>Chapter(s)</u>	<u>Title</u>
September 5	Chapter 1	Ch 1: Introduction and Vectors
September 12	Chapters 2 & 3	Ch 2: Motion in 1D; Ch 3: Motion in 2D
September 19	Chapters 3 & 4	Ch 3: Motion in 2D; Ch 4: Laws of Motion
September 26	Chapters 4 & 5	Ch. 4: Laws of Motion; Ch 5: Applications
September 27 & 28	<b>*** Nobel Conference - No Class ***</b>	
	<b>*** Exam 1 on September 30<sup>th</sup> (Chapters 1-5) ***</b>	
October 3	Chapters 6 & 7	Ch 6: Work and Energy; Ch 7: Potential Energy
October 10	Chapter 8	Ch 8: Momentum and Collisions
October 17	Chapter 10	Ch 10: Rotations
	<b>*** Exam 2 on October 21<sup>st</sup> (Chapters 6-10) ***</b>	
October 24 & 25	<b>*** Fall Break – No Class ***</b>	
October 26	Chapter 11	Ch 11: Gravitation
October 31	Chapter 12	Ch 12: Oscillatory Motion
November 7	Chapters 13 & 14	Ch 13: Mechanical Waves; Ch 14: Superposition
November 14	Chapter 15	Ch 15: Fluid Mechanics
November 21	Chapters 11-15	Exam 3 Review
	<b>*** Exam 3 on November 22<sup>nd</sup> (Chapters 11-15) ***</b>	
November 28	Chapters 16 & 17	Ch 16: Kinetics Ch 17: First law of Thermodynamics
December 5	Chapters 17 & 18	Ch 18: Entropy and the Second Law of Thermodynamics
December 12	Chapters 1-18	Exam 4 and Final Exam Review
	<b>*** Exam 4 on December 13<sup>th</sup> (Chapters 16-18) ***</b>	
December 14	<b>LAST DAY OF CLASS</b>	
	<b>*** Final Exam (Comprehensive) on December 16<sup>th</sup> (Friday) from 3:30pm-5:30pm ***</b>	