Point Loma Nazarene University
PHY141: General Physics I (4 hr) Fall 2016

Department of Physics and Engineering

Instructor: Dr. Paul D. Schmelzenbach	Meeting: 1:30-2:35 MWF (Taylor 106)
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Materials – *Physics* by Douglas Giancoli, 7th edition, a calculator, Mastering Physics

Description – A general introduction to physics including mechanics, thermodynamics, waves and sound. The course is taught primarily at the algebra/trigonometry level but does require limited use of calculus. Meets the professional requirements of life and medical science majors. Lecture and laboratory. Not repeatable. Letter grading.

Learning Outcomes – This course is one of the components of the General Education Program at Point Loma Nazarene University, in support of the general education learning outcome: Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature. The purpose of general education is to provide a common educational experience, to develop essential skills, and to provide a broad cultural background for personal and professional growth. Within these broader outcomes, in this course you will

1. translate the description of physics problems into the mathematical equations required to solve them using relevant physical principles.
2. calculate solutions to physics problems once appropriate equations or techniques are identified.
3. predict reasonable answers in appropriate problems, and assess the reasonableness of calculated answers
4. explain the physical meaning of the parameters in introductory physics equations
5. create and interpret graphical representations of physical quantities (motion graphs, vectors, standing waves, etc.)
6. gather and interpret data in a lab setting

University Mission: As with all courses at PLNU, this course supports the cause to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission: Within this broader mission, the Physics and Engineering Department at PLNU provides strong programs of study in the fields of Physics and Engineering. Our students are well prepared for graduate studies and careers in scientific and engineering fields. We emphasize a collaborative learning environment which allows students to thrive academically, build personal confidence, and develop interpersonal skills. We provide a Christian environment for students to learn values and judgment, and pursue integration of modern scientific knowledge and Christian faith.

Attendance: Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day. Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty

member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class Attendance in the Undergraduate Academic Catalog.

Academic Honesty – Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Honesty for definitions of kinds of academic dishonesty and for further policy information.

Academic Accommodations – If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information. For more details see the PLNU catalog. Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class. For more details see the PLNU catalog: http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Accommodations

Class Enrollment – It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Credit Hour – In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for an 4 unit class delivered over 16 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Final Exam – The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in th course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

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Course Calendar			
	Topics	Reading	Hmk
8/30	Introductions	None	
8/31	Units, Measures and Estimating	1-1 to 1-8	
9/2	Displacement, Velocity, Acceleration	2-1 to 2-4	Hmk 1
9/5	No class meeting		
9/7	Acceleration and Problem Solving	2-5 to 2-6	
9/9	Falling Objects, Graphing	2-7 to 2-8	Hmk 2a
9/12	Vectors: Graphical and Components	3-1 to 3-4	
9/14	Projectile Motion and Relative Motion	3-5 to 3-8	
9/16	Newton's Laws	4-1 to 4-5	Hmk 2b-3
9/19	Weight and Free Body Diagrams	4-6 to 4-7	
9/21	Friction, Inclines	4-8	
9/23	Review and Wrap up	None	Hmk 4
9/26	Exam 1: Chapters 1-4	None	
9/28	Uniform Circular Motion	5-1 to 5-4	
9/30	Gravitation; Types of Forces	5-5 to 5-10	Hmk 5a
10/3	Work and Energy	6-1 to 6-4	
10/5	Energy Conservation	6-5 to 6-7	
10/7	Energy Conservation; Power	6-8 to 6-10	Hmk 5b-6
10/10	Linear Momentum	7-1 to 7-3	
10/12	Collisions; Center of Mass	7-4 to 7-6; 7-8	
10/14	Angular Quantities	8-1 to 8-3	Hmk 7
10/17	Torque and Rotational Dynamics	8-4 to 8-6	
10/19	Rotational Energy and Momentum	8-7 to 8-9	
10/21	Fall Break		
10/24	Review and Wrap up	None	Hmk 8
10/26	Exam 2: Chapters 5-8	None	
10/28	No class meeting		
10/31	Equilibrium	9-1 to 9-3	
11/2	Equilibrium; Balance; Stress Strain and Fracture	9-4 to 9-6	
11/4	Pressure and Fluids	10-1 to 10-6	Hmk 9
11/7	Buoyancy and Bernoulli's equation	10-7 to 10-10	
11/9	Simple Harmonic Motion	11-1 to 11-3	
11/11	Harmonic Motion and Waves	11-4 to 11-7	Hmk 10
11/14	Waves	11-8 to 11-12	
11/16	Sound	12-1 to 12-4	
11/18	Wave Features of sound	12-5 to 12-8	Hmk 11-12
11/21	Exam 3: Chapters 9-12	None	
11/23	Thanksgiving Break		
11/25	Thanksgiving Break		
11/28	Temperature	13-1 to 13-6	
11/30	Ideal Gas; Kinetic Theory	13-7 to 13-12	
12/2	Heat; Specific Heat	14-1 to 14-4	Hmk 13
12/5	Latent Heat; Heat transfer	14-5 to 14-8	
12/7	Thermodynamics; Heat Engines	15-1 to 15-5	
12/9	Refrigerator; Entropy	15-6 to 15-9	Hmk 14-15
12/16	Final Exam: Friday at 1:30		

Preclass – In preparation for each class meeting there is a reading assignment. Because class meetings are not a standard lecture format, these reading assignments are very important, it is very important to come prepared to class. To complete the reading assignment you must answer three questions and submit them electronically by 8:00 a.m. before class. Late submissions will not be accepted. This electronic communication is so important because it is your voice in what material we emphasize during class meetings and provides me constant feedback of your understanding of the material. These submissions will be graded on the following scale: 2=demonstrates reading, 1=room for improvement, 0=unsatisfactory. These points are accumulated and are worth 5% of the final grade.

Lab – Lab meetings will provide you the opportunity for hands-on experience of topics from class meetings, improve lab technique, and data analysis. Labs will be preformed in small groups, but each individual is responsible for submitting his or her own results. Labs are worth 20% of your final grade. You must pass the lab portion of the class to pass the class.

Homework – Homework sets are due roughly each week, homework is worth 15% of your final grade. Practicing working physics problems is critical to your success in the class, and completing this practice on time is important. Late work receives a 10% reduction in possible value per day.

Exams – Three examinations will be given during the semester on September 26, October 26 and November 21. The final examination is on Friday, December 16 at 1:30 pm. Exams will be about half multiple-choice or short answer conceptual questions, and about half problems to solve. The final examination will be comprehensive. Exams will be closed book, but a sheet of formulas will be provided to you to use during your exam. Partial credit will be given for correct reasoning at any step of a problem, but only if it is communicated clearly enough for me to understand. For problems that call for a solution or explanation, no credit will be given for an answer alone; the method or reasoning must also be shown. Exams are to be taken at the time indicated in the syllabus unless other arrangements are made in advance with the professor for some unavoidable circumstance, and otherwise cannot be made up.

Final Grades – The grade you earn in this course is based on the scale shown to the right. The points you receive during the course are weighted accordingly:

- Preclass: 5%
- Homework/Activities: 15%
- Lab: 20%
- Tests (3): 35%
- Final Exam: 25%

A	100 - 91.0
A-	91.0 - 89.5
B+	89.5 - 87.5
B	87.5 - 81.0
B-	81.0 - 79.5
C+	79.5 - 77.5
C	77.5 - 71.0
C-	71.0 - 69.5
D+	69.5 - 67.5
D	67.0 - 61.0
D-	61.0 - 57.0