Point Loma Nazarene University

Department of Physics and Engineering

Fall 2026

PHY 1044/L General Physics I and Lab (3 + 1 units)

Final Exam: Monday, December 14, 1:30–4:00 pm

Lecture

MWF 12:15–1:10 pm, Latter 001

Dr. Paul D. Schmelzenbach

RS258 by appointment

paulschmelzenbach@pointloma.edu

Lab

RS 395

Dr. Michelle Chen (michellechen@pointloma.edu)

Section 1: T 7:25–9:55 am · Section 2: T 1:30–4:00 pm

Professor David Nichols (davidnichols@pointloma.edu)

Section 3: R 1:30–4:00 pm

PLNU Mission: To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department 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.

General Education Mission

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

Course 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. Letter grading.

Course Learning Outcomes

After completing this course, students can

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; create and interpret graphical representations of physical quantities (motion graphs, vectors, standing waves, etc.)
5. Gather and interpret data in a lab setting.

General Education Learning Outcomes

This course is one of the components of the Foundational Experience program at Point Loma Nazarene University, through which students will acquire knowledge of human cultures and the physical and natural world while developing skills and habits that foster life-long learning. Specifically, this course supports this broader context in developing GELO 1e. Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature. Assessment of this learning outcome will be demonstrated on the final exam embedded in questions typical of introductory physics.

Required Texts and Materials

Physics: Principles and Applications, 7th edition, by Giancoli; Scientific Calculator; Access to Expert TA.

Course Credit Hour Information

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 4-unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Assessment and Grading

The grade you earn in this course is based on the scale below. The points you receive during the course are weighted accordingly:

(15%) Preparation and Practice

- Preclass (2%): 2–3 short questions on the reading in preparation for class, due 10pm the night before.
- Homework and Activities (8%): through Expert TA, and occasional on-paper practice of what we have been learning.
- Homework Check-ins (5%): a brief, closed-note check tied to that week's homework (roughly 5 minutes, in class). If you've done the homework, they should feel easy. The lowest two scores will be dropped.

(20%) Lab

Labs emphasize hands-on measurement, data interpretation, and construction.

(40%) Exams

Four exams will be given during the semester. Exams will include both multiple-choice or short answer conceptual questions, and problems to solve. Exams will be closed book, but a sheet of formulas will be provided. 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.

(25%) Final Exam

The final examination will be comprehensive, with a slight emphasis on the final section of material in the course.

A	B	C	D	F
92–100 (A)	87–89 (B+)	77–79 (C+)	67–69 (D+)	< 59
90–91 (A−)	83–86 (B)	73–76 (C)	63–66 (D)	

	80–82 (B−)	70–72 (C−)	60–62 (D−)	

Late Assignments

Preclass assignments earn half points if submitted late but before the start of class; after this they receive no credit. Homework problems not submitted on time will receive a deduction of 20% per day (note this is on a per problem basis — only the problem not turned in will receive this deduction). Typically labs will be submitted at the end of the lab period.

Exams and Missing Exam Policy

Examinations and the Final Examination will include problems and questions over material assigned in the text, explored in homework, as well as material presented in class. Distributed specific learning outcomes for the section, or for the entire class, will provide a good means of study. No examination shall be missed without prior consent or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. If such an event arises, please ensure that you communicate with the professor as soon as possible so other arrangements can be made.

Final Exam

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

Incomplete Grade

A grade of incomplete will only be assigned in extremely unusual circumstances. If you believe that your particular circumstances qualify, be in clear communication with the professor as soon as you are able.

Artificial Intelligence (AI) Policy

You are allowed to use Large Language Models (like ChatGPT, NotebookLM, Claude, etc.) as a study tool, but not on any exams. Work that utilizes AI-based tools should be identified as such, including the tool used. Specific use cases will be clarified in class.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center, by email or phone at 619-849-2533. Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines approved accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course. Accommodations are not retroactive; as such, clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore,

planning ahead is vital in establishing appropriate accommodations for equal access to this course. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC eligibility process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

Additional Course Information

Additional PLNU policies and practices that apply to this course can be found at the following link: https://docs.google.com/document/d/1SoL5YMfCv_5cobhBwrDjbcZJzNKKTCfM/edit?usp=sharing&ouid=104297418648613020764&rtpof=true&sd=true

LomaBooks Instructions for Students

This course is part of our course material delivery program, LomaBooks. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your LomaBooks materials.

Class Meeting Calendar

Date	Topic	Reading	Hmk
8/31	Introductions	None	
9/02	Units, Measures and Estimating	1-1 to 1-8	
9/04	Displacement, Velocity, Acceleration	2-1 to 2-4	Hmk 1
9/09	Acceleration and Problem Solving	2-5 to 2-6	
9/11	Falling Objects and Graphing	2-7 to 2-8	
9/14	Vectors: Graphical and Components	3-1 to 3-4	Hmk 2
9/16	Projectile Motion	3-5 to 3-6; 3-8	
9/18	Wrap up and Review		Hmk 3
9/21	**Exam #1 (Chapters 1–3)**		
9/23	Newton's Laws; Weight	4-1 to 4-6	
9/25	Forces Practice I	4-7 to 4-8	
9/28	Forces Practice II	4-7 to 4-8	
9/30	Uniform Circular Motion	5-1 to 5-3	Hmk 4
10/02	Gravitation; Types of Forces	5-5 to 5-7; 5-10	
10/05	Work and Energy	6-1 to 6-6	Hmk 5
10/07	Energy Conservation	6-7 to 6-9	
10/09	Power & Wrap up	6-10	
10/12	**Exam #2 (Chapters 4–6)**		**Hmk 6**
10/14	Momentum I	7-1 to 7-4	
10/16	Momentum II	7-5 to 7-8; 7-10	
10/19	Angular Quantities	8-1 to 8-3	
10/21	Torque and Rotational Dynamics	8-4 to 8-6	
10/26	Rotational Energy and Momentum	8-7 to 8-9	Hmk 7
10/28	Equilibrium	9-1 to 9-3	
10/30	Balance; Stress Strain and Fracture	9-4 to 9-6	Hmk 8
11/02	Wrap up and Review		
11/04	**Exam #3 (Chapters 7–9)**		**Hmk 9**
11/06	Static Fluids	10-1 to 10-7	
11/09	Fluids in Motion	10-8 to 10-10	

Date	Topic	Reading	Hmk
11/11	Simple Harmonic Motion	11-1 to 11-6	
11/13	Harmonic Motion and Waves	11-7 to 11-12	Hmk 10
11/16	Sound Waves	12-1 to 12-5	
11/18	Interference and the Doppler Effect	12-6 to 12-9	Hmk 11
11/20	Wrap up and Review		
11/23	**Exam #4 (Chapters 10–12)**		
11/30	Temperature	13-1 to 13-4	
12/02	Ideal Gas; Kinetic Theory	13-6 to 13-10	
12/04	Heat; Specific Heat	14-1 to 14-4	Hmk 13
12/07	Latent Heat; Heat Transfer	14-5 to 14-8	
12/09	Basic Thermodynamics	15-1 to 15-4	Hmk 14
12/11	Heat Engines; Basic Entropy	15-5 to 15-8	Hmk 15
12/14	**Final Exam**		