

POINT LOMA NAZARENE UNIVERSITY
Department of Physics and Engineering

PHY 1054/L General Physics II and Lab *(3 + 1 units)*

MTWR 9:55–12:05 · Rohr Science 265 | Lab: MTW 1:00–3:00 pm

Final Exam: Thursday, July 16, 10:00 am–1:00 pm

Summer Session II 2026 · June 15–July 16

Paul D. Schmelzenbach, Ph.D.

Office Hours: MTW 9:00–10:00 am, 3:00–4:00 pm; R 9:00–10:00 (In classroom RS265)

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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.

Foundational Explorations 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 electricity and magnetism, optics, and modern physics. 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.

Course Learning Outcomes

After completing this course, students can:

- Translate the description of physics problems into the mathematical equations required to solve them using relevant physical principles.

- Calculate solutions to physics problems once appropriate equations or techniques are identified.
- Predict reasonable answers in appropriate problems, and assess the reasonableness of calculated answers.
- Explain the physical meaning of the parameters in introductory physics equations.
- Create and interpret graphical representations of physical quantities (vectors, fields, energy level diagrams, etc.).
- Gather and interpret data in a lab setting.

Foundational Experience & Course 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 FELO 1e, Quantitative Reasoning: students will be able to solve problems that are quantitative in nature.

Required Texts and Materials

Physics: Principles and Applications, 7th edition, by Giancoli; scientific calculator.

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 5 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:

Component	Weight	Description
Preclass	3%	In preparation for each class meeting, there is a reading assignment. Class meetings are not a standard lecture format, making these reading assignments especially important. Additionally, the summer session is quite compressed, making it imperative to come prepared to class. To complete the reading assignment, you must answer three questions and submit them electronically by 8:00 a.m. the day before class. Late submissions will not be accepted.
Lab	20%	Hands-on experience of topics from class meetings is the focus of the lab, along with a focus on technique and data analysis. Labs will be performed in small groups, but everyone is responsible for submitting their own results. You must pass the lab portion of the class to pass the class.
Homework	17%	Most days, there will be homework due. Practicing working physics problems is critical to your success in the class. In summer school, you simply can't fall behind, so late homework will not be accepted for credit.
Exams (3)	35%	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.

Component	Weight	Description
Final Exam	25%	The final exam is comprehensive, with an emphasis on the final material in the course.

Letter Grade Scale

A 92–100	B+ 87–89	C+ 77–79	D+ 67–69	F Below 59
A- 90–91	B 83–86	C 73–76	D 63–66	
	B- 80–82	C- 70–72	D- 60–62	

Exams

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.

Final Exam

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Class 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.

Late Assignments

As you may be aware, summer school is very fast-paced. Consequently, no late assignments will be awarded points unless prior arrangements have been made with the professor.

Incomplete Grade Assignment

Incompletes 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.

PLNU Copyright Policy

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

State Authorization

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on

whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on State Authorization to view which states allow distance education outside California.

PLNU Academic Honesty Policy

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 Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel. Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

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 (EAC@pointloma.edu or 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 allowed 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 AP in that particular course. Accommodations are not retroactive, so 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 should contact the EAC as early as possible (ideally before the beginning of the semester) to assure appropriate accommodations can be provided. 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 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.

PLNU Attendance and Participation Policy

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of 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 an "F" grade.

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.

Spiritual Care

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If you have questions, a desire to meet with the chaplain, or prayer requests, you can contact the Office of Spiritual Development.

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 materials.

Course Schedule

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Date	Topic	Reading	Hmk Due	Lab
6/15	Introductions and Charge	16-1 to 16-6	—	Lab 1: Electrostatics
6/16	Charge and the Electric Field	16.6–16.12	Hmk 16a	Lab 2: Electric Field Hockey
6/17	Electric Potential	17-1 to 17-10	Hmk 16b	Lab 3: Electric Potential Mapping
6/18	Electrical Current and Resistance	18-1 to 18-7	Hmk 17	—
6/22	Exam 1	—	Hmk 18	Lab 4: Resistivity
6/23	Electric Circuits	19-1 to 19-8	—	Lab 5: Circuits
6/24	Magnetism	20-1 to 20-10	Hmk 19	Lab 6: Slinky
6/25	Induction	21-1 to 21-7	Hmk 20	—
6/29	Induction & Light Basics	22-1 to 22-7	Hmk 21	Lab 7: Motors
6/30	Exam 2; Geometric Optics	23-1 to 23-3	Hmk 22	Lab 8: Intro Optics
7/01	Geometric Optics II	23-4 to 23-8		Lab 9: Optics
7/02	Wave Optics	24-1 to 24-12	Hmk 23	—
7/06	Optical Instruments	25-1 to 25-9	Hmk 24	Lab 10: Diffraction
7/07	Relativity	26-1 to 26-11	Hmk 25	Lab 11: Relativity
7/08	Exam 3	—	Hmk 26	Lab 12: Optical Instruments
7/09	Early Quantum Theory	27-1 to 27-13		—
7/13	Quantum of Atoms	28-1 to 28-11	Hmk 27	Lab 13: Hydrogen Spectra
7/14	Nuclear	30-1 to 30-11	Hmk 28	Lab 14: Radioactivity
7/15	Nuclear II	31-1 to 31-5	Hmk 30	Review
7/16	Final Exam	—	—	—