Point Loma Nazarene University
PHY242/242L: University Physics II (3 + 1 hr) Spring 2019

Department of Physics and Engineering

Instructor: Dr. Paul D. Schmelzenbach	Meeting: 1:30 -2:25 MW (L 02)
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Office Hours: 10:30-11:45 MWF, by appt.	Office Location: RS 258/Temp Trailer 2

Materials – Physics for Scientists & Engineering by Giancoli, 4th edition . Basic scientific calculator.

Description – An analytic, calculus-based study of classical physics appropriate for science and engineering majors with an emphasis on electromagnetism, circuits, and optics. Lecture and laboratory. Not repeatable. Offered in the fall. Letter grade.

Learning Outcomes – In this course there are a number of specific goals for you to meet from each chapter. These smaller goals fit into the following overall course learning objectives. Once you complete this course, you should be able to:

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 (electric fields, ray diagrams etc.)
6. gather and interpret data in a lab setting

Homework Through the semester, to improve your understanding to topics you will be completing various homework assignments. On homework sets collaboration between you and your peers is fine, but your work needs to be your own. Late homework will not be accepted unless their is a documented emergency. The lowest homework score will be dropped.

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.

Preclass questions Each class day there will be three preclass questions to answer electronically. These will be due the evening before class. Your responses to Preclass questions are graded on the following scale: 2=demonstrates reading/thinking; 1=room for improvement or late but before class, 0=unsatisfactory or submitted after class. For credit preclass questions must be submitted prior to class.

Exams – Four examinations will be given during the semester on January 30, February 22, March 25, and April 15. The final examination is held at the scheduled time on Wednesday, May 1 at 1:30. Exams cannot be made up, unless under extreme circumstances and arrangements made with the professor before the exam.

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:

- Homework: 20%
- Labs: 20%
- Preclass: 5%
- Tests (3): 35%
- Final Exam: 20%

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

University Mission: 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.

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 –

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRCs policies and procedures for assisting such students in the development of an appropriate academic

adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

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 a 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 Due
1/8	Introductions		
1/9	Static Charge and Coulomb's Law	21-1 to 21-5	
1/11	The Electric Field	21-6 to 21-9	
1/14	Motion in a field and Dipoles	21-10 to 21-11	
1/16	Gauss's Law 1	22-1 to 22-3	Hmk 21
1/18	Gauss's Law 2	22-1 to 22-3	
1/21	No Class Meeting		
1/23	Electric Potential 1	23-1 to 23-3	Hmk 22
1/25	Electric Potential 2	23-4 to 23-8	
1/28	Wrap up and Review		Hmk 23
1/30	Test 1: Chpt 21-23		
2/1	Capacitors 1	24-1 to 24-2	
2/4	Capacitors 2	24-3 to 24-5	
2/6	Ohm's Law	25-1 to 25-4	Hmk 24
2/8	Power and Current	25-5 to 25-10	
2/11	Circuits and Kirchohoff's Rules	26-1 to 26-3	Hmk 25
2/13	RC circuits	26-4 to 26-6	
2/15	Magnetism 1	27-1 to 27-3	Hmk 26
2/18	Magnetism 2	27-4 to 27-8	
2/20	Wrap up and Review		Hmk 27
2/22	Test 2: Chpat 24-27		
2/25	Ampere's Law 1	28.1-28.3	
2/27	Ampere's Law 2	28.4-28.5	
3/1	Biot-Savart Law	28.6-28.9	
3/4	No Class Meeting		
3/6	No Class Meeting		
3/8	No Class Meeting		
3/11	Induction and Faraday's Law 1	29.1-29.3	Hmk 28
3/13	Induction and Faraday's Law 2	29.4-29.7	
3/15	Inductance	30.1-30.3	Hmk 29
3/18	LR and LRC circuits	30.4-30.6	
3/20	LRC with AC	30.7-30.10	
3/22	Wrap up and Review		Hmk 30
3/25	Test 3: 28-30		
3/27	EM waves I	31.1-31.5	
3/29	EM waves II	31.6-31.10	
4/1	Ray Model of light: Reflection	32.1-32.3	Hmk 31
4/3	Ray Model of light: Refraction	32.4-32.7	
4/5	Thin lenses	33.1-32.2	Hmk 32
4/8	Thin lenses and optical instruments	33.3-33.6	
4/10	Optical instruments	33.7-33.10	
4/12	Wrap up and Review		Hmk 33
4/15	Test 4: 31-33		
4/17	Wave Nature of Light	34.1-34.3; 34.5	
4/19	No Class Meeting		
4/22	No Class Meeting		
4/24	Diffraction and Polarization I	35.1; 35.4-35.7	Hmk 34
4/26	Diffraction and Polarization II	35.10-35.11; 35.13	Hmk 35