Department of Physics and Engineering, Point Loma Nazarene University
PHY 1054 – General Physics II -- 4 Units (3 units lecture + 1 unit lab)
Spring 2020

Professor: Dr. Michelle Chen
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Office Hours: T 11:00 – 11:45 am; 1:30 – 2:30 pm;
W 1:30 – 2:30 pm;
R 2:30 – 3:30 pm;
F 1:15 – 1:45 pm;
and by appointment

Lecture: MWF 11:00 – 11:55 am, (LA 101)
Lab: Section 1: M 12:15 – 2:00 pm; (RS 295)
Section 2: T 12:30 – 2:15 pm; (RS 295)
Section 3: R 12:30 – 2:15 pm; (RS 295)
Section 4: T 3:00 – 4:45 pm (RS 295)

Final Exam: 10:30 am - 1:00 pm, Wednesday May 6, 2020.

Textbook: Physics by Douglas Giancoli, 7th edition, Prentice Hall 2014
Mastering Physics: Access to Mastering Physics (Access should still work from last semester.)
Course ID: **PHY1054PLNUSPRING2020**
Course Name: General Physics II – Spring 2020

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. Lectures and laboratory. Not repeatable. Letter grading.

Learning Outcomes: 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 cultures.

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
6. gather and interpret data in a lab setting

PLNU Mission: PLNU 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 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 f modern scientific knowledge and Christian faith.

Attendance and Participation: 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 Attendance Policy in the in the Undergraduate Academic Catalog.

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.

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 DRC's 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.

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 the catalog for definitions of kinds of academic dishonesty and for further policy information.

Final Exam: Date and Time: 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 the 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. Final Exam for this course is at 10:30 am – 1:00 pm on Wednesday May 6th, 2020.

Copyright Protected Materials: 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.

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 15 weeks. 3 units are for lectures and 1 unit is for labs. Specific details about how the class meets the credit hour requirements can be provided upon request.

Pre-Class: 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 to help you come prepared to class. To complete the reading assignments you must answer a few questions and submit them electronically through Canvas by 8:00 am 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. Late assignment will receive a 0.5 point deduction.

Homework: Mastering Physics Homework sets are due roughly each week. Homework is worth 20% of your final grade. Practicing working physics problems is critical to your success in the class, and completing this practice on time s important. Late work receives a 20% reduction in possible value per day.

Lab: Weekly 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 performed in small groups, but each individual is responsible for submitting their own results. Lab grade is 20% of overall course grade, therefore the lecture and the lab will have the same grade on your transcript. You must pass the lab portion of the class to pass the class. Lab reports will be turned in at the end of each lab. No late labs will be accepted. The lowest lab grade will be dropped.

Exam: There will be three in-class exams during the semester and one comprehensive final exam. 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 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. You must take ALL the exams in order to pass the class. **Final Examination Policy:** Successful completion of this class requires taking the final examination **on its scheduled day (Wednesday May 6th, 2020, 10:30 am – 1:00 pm)**.

Assessment and Grading: The points you receive during the course are weighted accordingly:

Component	**Weight**
Pre-Class	5%
Homework	15%
Lab	20%
Tests (3)	35% (equally weighted)
Final Exam	25%

The grade you earn in this course is based on the following scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
S≥ 91.0	91.0 >S≥ 89.5	89.5 >S≥ 87.5	87.5 >S≥ 81.0	81.0 >S≥ 79.5	79.5 >S≥ 77.5	77.5 >S≥ 71.0	71.0 >S≥ 69.5	69.5 >S≥ 67.5	67.5 >S≥ 61.0	61.0 >S≥ 57.0

PHY1054: General Physics II (Spring 2020)

(Tentative Syllabus, Subject to Updates)

Date	Topic	Reading	Lab (M/T/R)
T 01/14/20	Intro and Charge	16.1-16.3	
W 01/15/20	Coulomb's Law	16.5-16.6	
F 01/17/20	The Electric Field	16.7-16.9	
M 01/20/20	**No Class (Martin Luther King Jr. Day)**		
W 01/22/20	Electric Potential	16.11; 17.1-17.3	
F 01/24/20	Electric Potential II	17.4-17.5	
M 01/27/20	Capacitance	17.7-9	Electric Potential
W 01/29/20	Batteries, Circuits, Resistors	18.1-18.3	
F 01/31/20	Resistivity and Electric Power	18.4-18.7	
M 02/03/20	DC Circuits: Parallel and Series	19.1-19.2	Circuits
W 02/05/20	Kirchoff's Rules; Capacitors	19.3; 19.5-19.7	
F 02/07/20	Intro to Magnetic Fields	20.1-20.2; Review	
M 02/10/20	**Exam #1: Chapters 16-19**		Intro to Magnets
W 02/12/20	Magnetic Fields and forces	20.3-20.5	
F 02/14/20	More Forces and B Fields, Applications	20.6-20.7; 20.10	
M 02/17/20	More Forces and B Fields, Applications	20.12, 21.1-21.2	Motors
W 02/19/20	EMF Generators	21.3-21.6	
F 02/21/20	Transformers and Induction	21.7-21.8	
M 02/24/20	Snell's Law and Lenses	23.5-23.8	Lenses
W 02/26/20	Plane Mirrors	23.1-23.2	
F 02/28/20	Spherical Mirrors, index of refraction	23.3-23.4	
M 03/02/20	EM waves	22.1-22.4	No Lab
W 03/04/20	Wrap up and review		
F 03/06/20	**Exam #2: Chapters 20-23**		
M 03/09/20	***No Class (Spring Break)***		No Lab
W 03/11/20	***No Class (Spring Break)***		
F 03/13/20	***No Class (Spring Break)***		
M 03/16/20	Dispersion and Interference	24.1; 24.3-4	Diffraction
W 03/18/20	Diffraction Gratings, Thin Films	24.5-6; 24.8	
F 03/20/20	Polarization; Blue Sky; Cameras	24.10, 24.12; 25.1	
M 03/23/20	Human Eye; Magnifiers	25.2-25.3	Optical Devices
W 03/25/20	Telescopes; Resolution	25.4; 25.7-9	
F 03/27/20	Relativity part 1	26.1-26.3	
M 03/30/20	Relativity Part 2	26.4-26.5	Relativity
W 04/01/20	Relativity part 3	26.7-26.11	
F 04/03/20	Early Quantum Theory	27.1-27.4	
M 04/06/20	Waves-Particles; Model of atom	27.6-27.8; 27.10	Photon Interaction (M/T)
W 04/08/20	Atoms and wrapup	27.11-27.13	
F 04/10/20	***No Class (Easter)***		
M 04/13/20	***No Class (Easter)***		Photon Interaction (R)
W 04/15/20	QM; Uncertianity	28.1-3; 28.5-6	
F 04/17/20	QM; Uncertainty	28.7-8; 28.10-11	
M 04/20/20	**Exam #3: Chapters 24-27**		Atomic Spectrum
W 04/22/20	Radioactivity and alpha decay	30.1-30.4	
F 04/24/20	alpha, beta, gamma decay; dating	30.5-30.10	
M 04/27/20	Fission	30.11; 31.1-2	Radioactivity
W 04/29/20	Fusion; Radiation and the Body	31.3-7	
F 05/01/20	PET, NMR, MRI; review	31.9; 33.1-33.2	
M 05/04/20			
W 05/06/20	**Final Exam (10:30 am - 1:00 pm)**		
F 05/08/20			