POINT 1902 LOMA
NAZARENE UNIVERSITY

Department of Physics and Engineering

PHY4063 – Solid State Physics (Spring 2025) – 3 Units

Lecture: MWF 11:00 am – 11:55 am, Rohr Science 265

Final Exam: Monday, May 5th, 10:30 am – 1:00 pm, Rohr Science 265

INFORMATION	SPECIFICS FOR THE COURSE
Instructor title and name:	Dr. Michelle Chen
Phone:	619-849-2960
Email:	michellechen@pointloma.edu
Office location and hours:	RS264, by appointment, or M/F: 12 – 12:30 pm; T: 11 am – 12 pm; R: 12 – 1:30 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.

Course Description

An introduction to solid state engineering, including crystal structures, electron band theory, thermal properties, semiconductors, superconductors, nanostructures, nanofabrication, and devices.

Program and Course Learning Outcomes

This course supports the overall learning objectives of the physics and engineering programs in building your ability: (1) to apply physical principles, mathematical reasoning, and computational techniques to solve real-world problems (LO2), (2) to demonstrate good ethics in science (LO4), and (3) to effectively communicate complicated technical information (LO5).

Required Texts and Recommended Study Resources

Introduction to Solid State Physics, by Charles Kittel, 8th edition, 2005

Assessment and Grading

Graded Components

- **Pre-Class:** In preparation for each class meeting there is a reading assignment. To be ready for group work and higher-level learning, these reading assignments are very important to help you come prepared to class. To complete the reading assignment, you must answer a few questions and submit them electronically through Canvas by 10:00 am of the morning 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 2% of the final grade. The lowest 4 scores will be dropped.

- **Homework:** Homework will be given almost every week. You are strongly encouraged to work and discuss in a group, but you must turn in your own work. No late homework will be accepted except for warranted prearranged circumstances.

- **Examinations and Final Examination:** There will be two in-class exams during the semester and one research project and presentation as the final exam. All exam dates are indicated in the course calendar in the syllabus. Exams will be closed book, but you are allowed a single-sided letter-sized sheet of formula for 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 (Monday May 5th 2025, 10:30 am – 1:00 pm)**.

Grading Scale

- Your course grade will be based on the following:

Pre-Class	5%
Homework	25%
Exams	55%
Final Research Project	15%

Final Examination Policy

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.

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 619-849-2486). 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. The EAC makes accommodations available to professors at the student's request.

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 (i.e., 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 special 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/18i1pUoY0iCfB8w7JKxVvACQW309X-JRB/edit?usp=sharing&ouid=116164865489739533893&rtpof=true&sd=true