

PHY 472, Fall 2025: Syllabus

Instructor: Jennifer Cano

1 Instructor

Jennifer Cano

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2 Class meetings

Lectures will be held in-person Mondays and Wednesdays from 11-12:20. (Room TBD.)

Office hours: time TBD.

3 Course description

This course introduces the physics of solids. Phonon and electron band structures will be discussed in detail, with their applications to metals, semiconductors, superconductors, and magnetism. The course assumes a knowledge of thermodynamic and statistical mechanics and quantum mechanics. Calculus will be used extensively.

4 Textbook

The primary textbook for the class is “The Oxford Solid State Basics” by Steven Simon. A complementary textbook is the traditional “Introduction to Solid State Physics” by Kittel.

There are many other good textbooks. You may find it beneficial to gain multiple perspectives by reading different textbooks. Other classic textbooks include “Principles of the Theory of Solids” by Ziman; “Condensed Matter Physics” by Mardar; and “Solid State Physics” by Ashcroft and Mermin.

5 Homework and grading

Homework will be assigned weekly and will be due at the start of class. Late homework will be accepted at a 50% point reduction, up to two weeks after the initial deadline; no homework later than two weeks will be accepted. Please no electronic submissions.

There will be one midterm, to take place during a class period near the middle of the semester. The final exam will take place during the final exam period (Weds Dec 17, 11:15am-1:45pm). The intended grading scheme is as follows: homework (1/3), midterm (1/3), final (1/3).

Students are encouraged to collaborate on homework. However, the written solution turned in should be your own, expressed in your own words and equations. Copying blocks of text or equations from online sources is prohibited.

6 University Policies

Student Accessibility Support Center (SASC) Statement: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: <https://ehs.stonybrook.edu//programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Professions, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html.

Critical Incident Management Statement: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.