

# PHY 555, Fall 2021: Syllabus

Instructor: Jennifer Cano

## 1 Instructor

Jennifer Cano

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## 2 Class meetings

The lectures will be held Mon/Weds/Fri 9:15-10:08 in Physics 116. The class is intended to be in-person, but we will adapt as necessary.

Office hours: TBD.

## 3 Masks

Following current university policy: everyone participating in this class must wear a mask/face covering that covers the mouth and nose at all times. Any student not in compliance with this will be asked to leave the class.

## 4 Blackboard

Updates, announcements, and homework will be posted on Blackboard. It is your responsibility to stay updated.

## 5 Textbook

The primary textbook for the class is “Solid State Physics” by Ashcroft and Mermin. This is the classic book on the topic. A recommended complementary textbook is “The Oxford Solid State Basics” by Steven Simon, which is more modern and readable. There are many other good books; please explore. I will recommend other books or notes on particular topics as they come up.

## 6 Course description

This course concentrates on the basic notions of solid state physics, treated mostly within the single-particle approximation. Main topics include: crystal lattices and symmetries, reciprocal lattice and state counting, phonons, electron energy band theory, bonding and cohesion (semi-quantitatively), electron dynamics and electron transport in metals and semiconductors, screening,

optical properties of solids, and an introduction to superconductivity and magnetism. The topics may be adjusted according to time and interest.

## 7 Homework and grading

Homework will be assigned (roughly) every Friday, to be handed in the following Friday. There will be one midterm, intended to take place during a class period near the middle of the semester. The final exam will take place during the final exam period (Monday, Dec. 13, 11:15-1:45). The intended grading scheme is as follows: homework (40%), midterm (30%), final (30%).

Many answers to homework problems can be found online. It is in your interest to work out the problems yourself (or in groups) to best learn the material and do well on the exams.

## 8 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 Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, 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 Student Accessibility Support Center. For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/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 Technology & Management, 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](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 University 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.

Until/unless the latest COVID guidance is explicitly amended by SBU, during Fall 2021 "disruptive behavior" will include refusal to wear a mask during classes. For the latest COVID guidance, please refer to: <https://www.stonybrook.edu/commcms/strongertogether/latest.php>