

## Syllabus for Physics 140A-- Winter 2017

**Coordinates:** Tuesday/Thursday, 12:10-1:30PM, Physics building, room 140

**Instructor:** Inna Vishik, Physics 239, [ivishik@ucdavis.edu](mailto:ivishik@ucdavis.edu)

**Office hours:** TBD

**Textbook:** "Introduction to Solid State Physics, 8<sup>th</sup> edition" by C. Kittel

**TA:** Joseph Trost

**TA office hours:** TBD

**Assignments:** Weekly problem sets, one in-class midterm (date TBD), one final (March 22, 1-3PM, Phys 140A)

**Grading:** Homework 20%, Midterm 30%, final 50%

**Homework policy:** Homework assigned on Tuesday and due at the beginning of class the following Tuesday. Lowest homework grade will be dropped. Late homework: 50% deduction if turned in within 24 hours, 75% deduction if turned in 24-48 hours of due date, not accepted after 48 hours.

**Exam policy:** One handwritten note sheet (8.5 x 11", front and back) may be used for the midterm and final, and will be collected with the exam.

**Overview:** Physics 140A is an introductory course to the physics of crystalline solids, to prepare students for understanding applications of this field, for pursuing research in this area, or for preparing for graduate study. Topics covered in 140A include:

- Crystal structure
- Reciprocal lattice and diffraction
- Crystal Binding
- Elastic properties of solids
- Phonons: microscopic and aggregate considerations
- Free electron gas

### Prerequisites:

Link to physics course listings/descriptions: <http://physics.ucdavis.edu/academics/physics-courses>

- Phys 115A (Foundations of Quantum Mechanics) or equivalent (especially harmonic oscillator and quantum particle in a box)

- Phys 104A (Introduction to Methods of Mathematical physics) or equivalent (specifically, Fourier analysis, vector spaces, and partial differential equations will be used frequently in the course)
- Phys 9B,C,D or 9HB,C,D or equivalent