

Syllabus for Physics 140B-- Spring 2020

Coordinates: Mon/Wed/Fri, 11:00-11:50AM via Zoom. Lectures will be recorded if you prefer to watch on your own time. If you attend 'live' lectures, please note that they will be recorded for the convenience of other students, so any questions/statements you verbalize will also be recorded. You are welcome to ask questions or make comments during lecture, but I am obligated to tell you that lectures are recorded. Because canvas sites have limited storage, recorded lectures will not be left up indefinitely. Thus, if you plan on watching lectures on your own time, please do so within a week of the lecture.

Instructor: Inna Vishik, ivishik@ucdavis.edu. My office is physic 239, but it is likely that all contact will be virtual for the duration of spring quarter.

Office hours: TBD

Textbook: "Introduction to Solid State Physics, 8th edition" by C. Kittel

TA: Yuxi Zhang, zyxzhang@ucdavis.edu

TA office hours: TBD

Assignments: Weekly problem sets, one take-home midterm (TBD), one optional take-home final (6/11/2020 6:00 PM). For take-home exams you will have 24 hours to complete them. All assignments should be submitted in gradescope, linked from the course canvas page.

Grading: Homework 30%, Midterm 30%, final 40% **OR** homework 50% and midterm, 50%.

Homework policy: Homework will be due (via gradescope) at the beginning of class on Wednesdays. Lowest homework grade will be dropped. Late homework: 50% deduction if turned in within 24 hours, not accepted after 24 hours.

Exam policy: Exams will be take-home and open-book, open-notes, open internet. You can consult any source EXCEPT your classmates; you must work on exams individually. For each problem, you must write down which sources you consulted.

Overview: Physics 140B is the second quarter of the 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 140B include:

- Free electron gas
- Energy bands
- Semiconductor crystals
- Fermi surfaces and metals
- Superconductivity and magnetism

Prerequisites:

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

- Phys 140A
- 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

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