

University of Vermont
Department of Physics

Physics 242: Introduction to Solid State Physics

Fall 2022

Instructor: Dr. Dennis Clougherty	Time: MWF 9:40-10:30 AM
Email: dennis.clougherty+PHYS242@uvm.edu	Place: Lafayette L406

Course Description: Introduction to crystal structures, reciprocal lattices, lattice vibrations. Thermal properties of solids and free electron theory of metals and semiconductors. Elementary band theory and introduction to electronic transport theory.

Prerequisites: PHYS 128.

Objectives: Using semiclassical models, students will develop an understanding of the fundamental properties of crystalline solids.

Course Personnel:

Ms. Beth Stinebring, administrative assistant (beth.stinebring@uvm.edu).

Office Hours: W 3:15-3:50 PM & by appointment.

References:

1. C. Kittel, *Introduction to Solid State Physics*, 8th edition, (Wiley, 2004). (This is the Ps9c5(lattice)-400(vib

Course Outline:

1. Crystal Structure
2. The Reciprocal Lattice
3. Phonons
4. Fermi Gas
5. Band Structure
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Accommodations: In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Disability Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. See <http://www.uvm.edu/access> for more information.

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