

**University of Hawaii**  
**Department of Physics and Astronomy**

**Phys 440, Solid State Physics, Fall 2024**

**Time:** MWF 1:30-2:20 Wat 113

**Instructor:** Prof. Klaus Sattler, email: [sattler@hawaii.edu](mailto:sattler@hawaii.edu)

**Office:** Wat 306

**Office hours:** by appointment

**Course Outline:**

Chapter 1: Crystal Structure

Chapter 2: Wave Diffraction and the Reciprocal Lattice

Chapter 3: Crystal Binding

Chapter 4: Phonons I. Crystal Vibrations

Chapter 5: Phonons II. Thermal Properties

Chapter 6: Free Electron Fermi Gas

Chapter 7: Energy Bands

Chapter 8: Semiconductor Crystals

Chapter 9: Fermi Surfaces and Metals

Chapter 10: Superconductivity

Chapter 11: Magnetism

Chapter 12: Special Topics

**Homework:** At the end of every week, please prepare a one-page essay describing what you learned during that week, and bring it to class on Monday.

**Exams:** We will have three midterm exams and the final examination.

Test Dates: Test 1: Sept 23, Test 2: Oct21, Test 3, Nov. 18

Final Exam: Monday Dec 16, 2:15-4:15 pm

**Grade percentages:** Homework (25%), Midterm 1 (15%), Midterm 2 (15%), Midterm 3 (15%), Final exam (30%)

**Grade scale:** A (85 – 100), B (70 – 85), C (55 – 70), D (40 – 55), F (< 40)

**SYLLABUS:** The syllabus describes the intended progression of the course. The syllabus and homework assignments will be revised as needed. Changes to the syllabus and the homework assignments will be announced.