

PHYS 4P70/5P12- Condensed Matter Physics

- I. FW23 Instructor: Prof. F S Razavi
- II. frazavi@brocku.ca
- III. Meeting Times: Mon, Thurs 14.30-16- TH149

IV. Suggested Textbooks: Several textbooks are available from Library in electronic or text form,

- 1. Introduction to Solid State Physics Charles Kittel.
- 2. The Oxford Solid State Basics, Steven H. Simon, Oxford University Press (2013).
- 3. Solid State Physics, by N. Ashcroft and D. Mermin (Advanced).
- 4. Solid State Physics: Essential Concepts, by David W. Snoke (Advanced).

V. Brock Calendar Entry,

Crystal structures and crystal binding; the vibration of atoms in solids and the thermodynamic of solids; introduction to transport properties of solids.

Prerequisites: PHYS 3P41- Statistical Physics I and 3P70- Introduction to Quantum Mechanics.

VI. Topics;

- 1. Crystal structure and reciprocal lattice.
- 2. X-ray and Neutron scattering.
- 3. Crystal binding.
- 4. Phonon and crystal vibration.
- 5. Phonon and thermal properties of crystals.
- 6. Free electron and Fermi gas.

VII. Course Policies,

All students are required to know and abide by the Academic Integrity Policy of Brock University. The University takes Academic Misconduct extremely seriously and will follow its strict procedures to the letter in all cases. <https://brocku.ca/academic-integrity/>

VII. Marking Scheme,

- | | |
|---------------------------------|-----|
| 1. Assignments (5 total), | 30% |
| 2. Midterm Exam, | 30% |
| 3. Final Exam Oral (25 minutes) | 40% |