

Solid State Physics Syllabus*

Week	Topic	Chapter	Notes
1 (13-17 Jan.)	Cohesion in Condensed Phases & Lattice Structure	1&2	
2 (20-24 Jan.)	Crystal Structure: Miller Indices and the Reciprocal Lattice	2	No Class: Mon. Jan. 20
3 (27-31 Jan.)	Determination of Crystal Structure: Diffraction Techniques	3	
4 (3-7 Feb.)	Mechanical Properties of Solids Defects and Elastic Constants	4	
5 (10-14 Feb.)	Thermal Properties of Solids I: Einstein and Debye Models	5	Wed. Feb. 12: Mark out of town ... class to be rescheduled
6 (17-21 Feb.)	Thermal Properties of Solids II: Phonons	5	
7 (24-28 Feb.)	Electronic Properties of Solids I: The free electron model	6	Midterm Exam: Fri. Feb. 28
8 (3-7 Mar)	Electronic Properties of Solids II: The periodic potential	7	
(10-14 Mar.)	SPRING BREAK		
9 (17-21 Mar.)	Some Physical Properties of Metals	8 & 9	
10 (24-28 Mar.)	Semiconductors	10	
11 (31 Mar-4 Apr.)	Magnetism	11	
12 (7-11 Apr.)	Superconductivity & Student Presentations	13	
Take-Home Final Exam: due Wednesday April 16, 5 PM			

*Note: This schedule is subject to change through the term, although the exam dates are firm.

Possible Physics 375 experiments:

- 1) X-ray diffraction: transmission Laue method
- 2) X-ray diffraction: single crystal Bragg method
- 3) X-Ray diffraction: Debye-Scherrer powder pattern
- 4) Hall effect
- 5) Semiconductor gap energy