

<i>Chapter</i>	<i>Prerequisites</i>	<i>One-Semester Introduction</i>		<i>Two-Semester Introduction</i>	
		LECTURES	READING	LECTURES	READING
1. Drude	None	All		All	
2. Sommerfeld	1	All		All	
3. Failures of free-electron model	2		All		All
4. Crystal lattices	None	Summarize	All	All	
5. Reciprocal lattice	4	All		All	
6. X-ray diffraction	5	96–104		All	
7. Crystal symmetries	4				All
8. Bloch's theorem	5	132–143		All	
9. Nearly free electrons	8 (6)	152–166		All	
10. Tight binding	8		176	176–184	184–189
11. Computing band structure	8 (9)		192–193		All
12. Semiclassical dynamics	2, 8	214–233		214–233	
13. Semiclassical transport	12				244–246

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		LECTURES	READING	LECTURES	READING
14. Measuring the Fermi surface	12	264–275		264–275	
15. Band structure of metals	8 (2, 9, 10, 11, 12)		All	All	
16. Beyond relaxation-time approximation	2 (13)				All
17. Beyond independent electron approximation	2		337–342	330–344	345–351
18. Surface effects	2, 4 (6, 8)		354–364	354–364	
19. Classification of solids	2, 4 (9, 10)		All		All
20. Cohesive energy	19 (17)	396–410		All	
21. Failures of static lattice model	(2, 4)		All		All
22. Classical harmonic crystal	5	422–437		All	
23. Quantum harmonic crystal	22	452–464		All	

24. Measuring phonons	2, 23		470-481	All	
25. Anharmonic effects	23		499-505	All	
26. Phonons in metals	17, 23 (16)	523-526		512-519 523-526	
27. Dielectric properties	19, 22		534-542	All	
28. Homogeneous semiconductors	2, 8, (12)	562-580		All	
29. Inhomogeneous semiconductors	28	590-600		All	
30. Defects	4 (8, 12, 19, 22, 28, 29)		628-636		All
31. Diamagnetism, Paramagnetism	(2, 4, 14)	661-665		All	
32. Magnetic interactions	31 (2, 8, 10, 16, 17)	672-682		672-684	
33. Magnetic ordering	4, 5, 32		694-700	All	
34. Superconductivity	1, 2 (26)		726-736	All	