

Quantum Mechanics II (Spring 2003)

Week	Date	Topic	Textbooks	Date	Topic	Textbooks
1	13 Jan	Perturbation Theory: Introduction	Merzbacher §8.3,18.1 Sakurai §5.1	16 Jan	Perturbation Expansion: Solution and Examples	Merzbacher §18.2-4 Sakurai §5.1
2	20 Jan	No Classes		23 Jan	Degenerate Perturbation Theory; Examples	Merzbacher §18.5 Sakurai §5.2
3	27 Jan	Atomic Fine Structure; Zeeman Effect	Merzbacher §18.6 Sakurai §5.3	30 Jan	Exchange Symmetry; The Helium Atom	Merzbacher §18.8 Sakurai §6.4
4	3 Feb	Time Dependent Potentials; The Interaction Picture	Sakurai §5.5 Merzbacher §19.1	6 Feb	Perturbation Expansion; Fermi's Golden Rule	Sakurai §5.6 Merzbacher §19.2,7
5	10 Feb	Interactions with the Classical Radiation Field	Sakurai §5.7 Merzbacher §19.4	13 Feb	Absorption Cross Section; The Photoelectric Effect	Sakurai §5.7 Merzbacher §19.5,6
6	18 Feb (Tues)	Formal Approach to (Elastic) Scattering	Merzbacher §20.1; 13.1 Sakurai §7.1	20 Feb	Differential Cross Section; Scattering Amplitudes	Merzbacher §13.2,3 Sakurai §7.1
7	24 Feb	Born Approximation; Higher Order Scattering	Merzbacher §13.4 Sakurai §7.2	27 Feb	Representation in Coordinate space	Merzbacher §13.3
8	3 Mar	Partial Wave Analysis: Expansion Formalism	Merzbacher §13.5	6 Mar	Partial Wave Analysis: Applications	Merzbacher §13.5,7
9	10 Mar	No Classes (Spring Break)		13 Mar	No Classes (Spring Break)	
10	17 Mar	Identical Particles: Permutation Symmetry	Sakurai §6.1	20 Mar	Identical Particles: Fock Space formalism	Merzbacher §21.1,2
11	24 Mar	Field Operator Algebra	Merzbacher §21.3	27 Mar	Fields and Dynamics	Merzbacher §21.4-6
12	31 Mar	The Photon Field	Merzbacher §23.1	3 Apr	Energy and Momentum in the Electromagnetic Field	Merzbacher §23.2
13	7 Apr	Interactions with Charged Particles	Merzbacher §23.3	10 Apr	Relativistic Wave Mechanics	Landau Ch.13
14	14 Apr	The Dirac Equation	Landau Ch.14	17 Apr	Electron-Positron Fields	Merzbacher §24.1,2
15	21 Apr	Symmetries and the Dirac Equation	Merzbacher §24.3,9	24 Apr	Solving the Dirac Equation for Central Potentials	Merzbacher §24.9
16	28 Apr	The Hydrogen Atom	Merzbacher §24.9	1 May	No Classes	