

Physics 137A - Lecture 2
Quantum Mechanics
Syllabus, Spring 2015

Instructor: Austin Hedeman

Time: Monday/Wednesday/Friday, 5:00pm – 6:00 pm

Location: 20 Barrows

Week	Topics	Notes
Week 1 1/19 - 1/23	Wavefunctions and the Probability Interpretation. 1.2, 1.4 Expectation Values and Operators. 1.3, 1.5	No Class on Monday, 1/19 No Discussion Sections this week.
Week 2 1/26 - 1/30	Dispersion and the Uncertainty Relation. 1.6 Time-Dependent Schrödinger Equation. 1.1 Separation of Variables and Stationary States. 2.1 Energy Eigenfunctions. 2.1 The Infinite Square Well and Basis Functions. 2.2	Discussion Sections start.
Week 3 2/2 - 2/6	Wave-Function Collapse. 1.2 The Free Particle. 2.4 Momentum Space Wavefunctions. 2.4 Wave Packets. 2.4	
Week 4 2/9 - 2/13	The Finite Square Well and Boundary Conditions. 2.6 Tunneling, Transmission, and Reflection. 2.5, 2.6	Friday, 2/13 will be the last lecture containing material for MT1.
Week 5 2/16 - 2/20	Vector Spaces and Kets. 3.1 <i>Midterm 1</i>	No Class on Monday, 2/16 Midterm 1 - Friday, 2/20
Week 6 2/23 - 2/27	Inner Product and Bras. 3.1 The Hilbert Space. 3.1 Operators and Observables. 3.2, 3.3	
Week 7 3/2 - 3/6	Bases. Commutation Relations and the Commutator. The Postulates of Quantum Mechanics. 3.4 The Uncertainty Principle. 3.5	
Week 8 3/9 - 3/13	Two-Level Systems (Spin). The Simple Harmonic Oscillator. 2.3	
Week 9 3/16 - 3/20	The Simple Harmonic Oscillator Continued. 2.3 Position and Momentum Bases. 2.4 <i>Midterm 2</i>	Midterm 2 - Friday, 3/20
3/23 - 3/27	<i>No Class - Spring Break</i>	
Week 10 3/30 - 4/3	Separation of Variables in Cartesian Coordinates. 3D Particle in a Box. Degeneracy. 3D Simple Harmonic Oscillator.	
Week 11 4/6 - 4/10	Separation of Variables in Spherical Coordinates. 4.1 The Angular Equation. 4.1.2	
Week 12 4/13 - 4/17	Angular Momentum. 4.3 The Radial Equation and Effective Potential. 4.1.3	
Week 13 4/20 - 4/24	The Hydrogen Atom. 4.2 Spin. 4.4	
Week 14 4/27 - 5/1	Addition of Angular Momentum. 4.4.3	
5/4 - 5/8	<i>Reading/Review/Recitation Week</i>	
Finals Week 5/11 - 5/15	Final Exam Friday, May 15 3:00pm - 6:00pm	

Discussion Sections:

GSI: Kolen Cheung (khcheung@berkeley.edu)

Section 201: Tuesday 11:00am - 12:00pm 81 Evans
 Section 202: Wednesday 4:00pm - 5:00pm 234 Dwinelle

This syllabus is subject to minor changes. Please pay attention to any announcements online or in lecture.