UC Berkeley
Physics 137A - Lecture 001
Quantum Mechanics, Fall 2015
Syllabus

Week	Topics	Notes
Week 1 8/24 - 8/28	Wavefunctions and the Probability Interpretation. *1.2, 1.4* Expectation Values and Operators. *1.3, 1.5*	*No Class on Monday, 8/24* *No Discussion Sections this week.*
Week 2 8/31 - 9/4	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 9/7 - 9/11	Wave-Function Collapse. *1.2* The Free Particle. *2.4* Momentum Space Wavefunctions. *2.4*	*No Class on Monday, 9/7*
Week 4 9/14 - 9/18	Wave Packets. *2.4* The Finite Square Well and Boundary Conditions. *2.6* Tunneling, Transmission, and Reflection. *2.5, 2.6*	
Week 5 9/21 - 9/25	Tunneling, Transmission, and Reflection (con't). *2.5, 2.6* *-----Here Ends Material for Midterm 1-----* Vector Spaces and Kets. *3.1* *Review for Midterm 1*	***Midterm 1 - Friday, 9/25***
Week 6 9/28 - 10/2	Inner Product and Bras. *3.1* The Hilbert Space. *3.1* Operators and Observables. *3.2, 3.3*	
Week 7 10/5 - 10/9	Bases. Commutation Relations and the Commutator. The Postulates of Quantum Mechanics. *3.4* The Uncertainty Principle. *3.5*	
Week 8 10/12 - 10/16	Two-Level Systems. The Simple Harmonic Oscillator. *2.3*	
Week 9 10/19 - 10/23	The Simple Harmonic Oscillator Continued. *2.3* Position and Momentum Bases. *2.4* *-----Here Ends Material for Midterm 2-----* Separation of Variables in Cartesian Coordinates. 3D Particle in a Box.	
Week 10 10/26 - 10/30	*Review for Midterm 2* Degeneracy. Separation of Variables in Spherical Coordinates. *4.1.1* The Angular Equation. *4.1.2*	***Midterm 2 - Monday, 10/26***
Week 11 11/1 - 11/6	Spherical Harmonics. The Radial Equation and Effective Potential. *4.1.3* Particle in an Infinite Spherical Well. The Hydrogen Atom. *4.2*	
Week 12 11/9 - 11/13	The Hydrogen Atom (con't). Angular Momentum Eigenfunctions. *4.3.2*	*No Class on Wednesday, 11/11*
Week 13 11/16 - 11/20	Angular Momentum Eigenstates. *4.3.1* Spin Angular Momentum. *4.4.1*	
Week 14 11/23 - 11/27	Spin in a Magnetic Field. *4.4.2* The Stern-Gerlach Experiment.	*No Class on Wednesday, 11/25* *No Class on Friday, 11/27*
Week 15 11/30 - 12/4	Addition of Angular Momentum. *4.4.3* Entanglement and the EPR Paradox. *12.1*	
12/7 - 12/11	*Reading/Review/Recitation Week*	
Finals Week 12/14 - 12/18	***Final Exam*** ***Thursday, December 17*** ***7:00pm - 10:00pm***	

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

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