Physics 137A - Quantum Mechanics - Spring 2018
Reading Assignments
Last updated: 1/16

The following is a listing of the readings for the course. Please try to read these sections *before* class on that given week. Don't worry if you don't *understand* the readings fully on your first pass! After the lecture on a given topic it is worthwhile to go back and *reread* the relevant sections.

Note that 'G' refers to Griffiths and 'S' refers to Shankar (which is available as an electronic resource through the UC Berkeley Library at http://link.springer.com/book/10.1007%2F978-1-4757-0576-8).

Week 1	1/15 - 1/19	*G: 1.2, 1.3, 1.4* *S: Chapter 3*	The Wave Function The Statistical Interpretation
Week 2	1/22 - 1/26	*G: 1.1, 1.5, 1.6*	Expectation Values and Operators; Dispersion Measurement; Time Dependence
Week 3	1/29 - 2/2	*G: 2.1, 2.2, 2.5*	Stationary States; The Infinite Square Well Orthonormal Bases; The Free Particle The Fourier Transform
Week 4	2/5 - 2/9	*G: 2.5, 2.6*	Bound States and Scattering States The Finite Square Well
Week 5	2/12 - 2/16	*G: 8.1,*[1] *8.2,*[1] *2.3*[2]	Sketching Wave Functions The Simple Hamonic Oscillator
Week 6	2/19 - 2/23	*G: A.1, 3.1* *S: 1.1, 1.3*	The Double-Finite Well Toy Model[3] The Hilbert Space; Kets; Bras
Week 7	2/26 - 3/2	*G: A.2, A.3, A.5, A.6, 3.2* *S: 1.2, 1.3, 1.4, 1.5, 1.6, 1.8*	Inner Products; Operators Observables; The Eigenvalue Equation
Week 8	3/5 - 3/9	*G: 3.3, 3.4, 3.5.3* *S: 1.9, 1.10, 4.1, 4.2, 4.3*	Observables; Eigenbases Projection Operators; Time-Dependence
Week 9	3/12 - 3/16	*G: A.4, 2.3, 3.5* *S: 1.7, 7.1, 7.4, 9.2, 11.4*	Active and Passive Transformations The Simple Harmonic Oscillator The Uncertainty Principle
Week 10	3/19 - 3/23	*G: 4.1.1, 4.1.2* *S: 10.1, 10.2*	Multiple Degrees of Freedom; 3D Particle in a Box Separation of Variables in Spherical Coordinates The Angular Equation
Week 11	4/2 - 4/6	*G: 4.1.3, 4.2* *S: 12.6, 13.1, 13.2*	Spherical Harmonics; The Radial Equation Particle in a Spherical Box; Hydrogen
Week 12	4/9 - 4/13	*G: 4.2, 4.3* *S: 12.2, 12.3, 12.4, 12.5*	Hydrogen; Angular Momentum Eigenstates Angular Momentum Eigenfunctions
Week 13	4/16 - 4/20	*G: 4.4.1, 4.4.2* *S: Chapter 14*	Spin Angular Momentum; Spin in a Magnetic Field The Stern-Gerlach Experiment
Week 14	4/23 - 4/27	*G: 4.4.3* *S: 15.1, 15.2*	Addition of Angular Momentum The Clebsch-Gordan Coefficients
RRR	4/30[4]	*G: 12.1, 12.2, 12.4*	Schrödinger's Cat; Entanglement and EPR The Bell Inequalities

[1] We will just concerned with the qualitative aspects of Sections 8.1 and 8.2 that let us draw wave functions.

[2] Skip Section 2.3.1 for now. We will return to it at the end of the formalism section!

[3] I couldn't find a good source for the double-well model the way we introduce and use it in class. My notes are fairly detailed on it, though, and you can explore it using the "Bound States" applet: https://www.physport.org/examples/quilts/possible-wavefunction/bound-states_en.jar.

[4] On Monday of RRR week at our usual class time I will hold a "just for fun" lecture (you are *not* responsible for any of these materials) to explore these topics!