

This course and all our interactions are based on the premise that students and I (Rafi Ullah) will not resort to any means of taking unfair advantage of one another. I will not penalize any student unfairly and will not unduly advantage another. I will stick to the norms of decency and mutual respect to my students. Similarly, students will also stick to an honor code - they will not cheat or help others cheat or plagiarize. I will not actively go out looking for plagiarism or cheating. However, if something comes to my notice, I will immediately refer this case to the School's Disciplinary committee for subsequent disciplinary action.

Course Description

This course introduces the basic framework of quantum mechanics with both introductory and advanced examples. It is designed to alleviate many of the weaknesses left over in traditional introductory quantum mechanics courses and revises and strengthens many concepts that usually create problems for students in other advanced courses that build on quantum mechanics. The course also introduces students to many advanced topics.

Tentative Course Schedule

Lectures	Topic
1 - 6	Introduction to basic formalism Linearity, operators, expectation values, wavefunctions, Dirac notation, postulates of quantum mechanics, time-dependent and time-independent Schrodinger wave equations
7 – 10	One dimensional problems Infinite square well, free particle, wavepacket, simple harmonic oscillator
11-14	Particle in a Coulomb potential Hydrogen atom, fine structure, hyperfine structure
15-17	Angular Momentum and Spin
18-19	Time-independent perturbation theory
20-21	Time-dependent perturbation theory
22-23	Identical particles
24-25	Band structure
26-28	Introduction to quantum computing