

Quantum Mechanics

The course aims to provide an introduction to the basics of quantum mechanics. To do this we will develop the language and machinery of quantum mechanics and use these to solve a wide range of problems. In-class discussion will be encouraged, especially when tackling some of the less intuitive parts of quantum mechanics. Wherever appropriate computer applets will be used to illustrate quantum phenomena.

Textbook: Introduction to *Quantum Mechanics* by David J. Griffiths (2nd Edition)

Syllabus Outline:

Week	Textbook Chapter	Topics
1	1	The statistical interpretation, normalization
2	1, 2	Uncertainty Principle, Infinite square well
3	2	Harmonic oscillator
4	2	Free particle
5	2	Delta function well and finite square well
6	3	Vectors and matrices
7	3	Operators, eigenfunctions and eigenvalues
8	3	Uncertainty Principle
9	3	3D Schrodinger Equation
10	4	Schrodinger equation in spherical coordinates
11	4	Hydrogen atom and angular momentum
12	4	Spin $\frac{1}{2}$
13	4	Addition of angular momentum
14	4	Applications to atomic physics
15	4	Quantum measurement.