

Physics 5401 - Quantum Mechanics I - MW 9:30-10:45 -Spring 2021

Instructor: Gayanath Fernando, Office: GS213, Phone: x-0442

Office hours: By appointment

- Text: Principles of Quantum Mechanics (2nd edition) by R. Shankar. Other useful texts: Quantum Physics by S. Gasiorowich; Lectures on Quantum Mechanics by G. Baym; Quantum Mechanics (Vol. 1) by Messiah; The Principles of Quantum Mechanics (4th edition) by P. A. M. Dirac; Quantum Mechanics by Eugene Merzbacher (3rd edition); Quantum Mechanics by L. Schiff.
- This is an introductory graduate level course in Quantum Mechanics, which has become the fundamental theory of atomic phenomena. I assume that you have had some exposure to Classical Mechanics as well as elementary functions and techniques in Mathematical Physics.
- Shankar's book is the assigned text. However, all the other texts listed above are excellent reading material.
- The topics I intend to cover include (but not limited to), vector (Hilbert) spaces, wave particle duality, probabilistic interpretation, Schrödinger equation, expansion postulate, one dimensional potentials, operator methods (algebra), Dirac notation, harmonic oscillator, orbital angular momentum, Hydrogen atom and some perturbation theory.
- I encourage you to ask questions both in and out of class.
- I will assign several homework problem sets during the semester and your grade will depend on the homework (10%) and performance in the 2 in-class exams (25% each) + the final (40%).