

Quantum Physics (Phy431) 2025-26, 1st Semester

Instructor: Sudipta Dubey

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Lectures: Monday, Thursday, 9:00 - 10:15 at L10

Tutorial: Tuesday, 9:00 – 10:00 at L11

Course Content:

Origins of Quantum Theory, Schroedinger Equation, Application to One Dimensional Problems, WKB Approximation, Central Potentials, Quantum Harmonic Oscillator, Hydrogen Atom, Hilbert Space Formalism for Quantum Mechanics, Symmetries in Quantum Mechanics, Angular Momentum, Addition of Angular Momenta, Identical Particles, Spin and Statistics, Pauli Exclusion Principle, Variational Method, Applications to Helium Atom and Hydrogen Molecule Ion.

Books:

1. R. Shankar, "Principles of Quantum Mechanics"
2. David J. Griffiths, "Introduction to Quantum Mechanics"
3. J. J. Sakurai, "Modern Quantum Mechanics"
4. Claude Cohen-Tannoudji, Bernard Diu, Frank Laloë, "Quantum Mechanics"

Evaluation:

In class assessment: 30%, Mid-Sem exam: 30%, End-Sem exam: 40%

In class assessment which is 30% comprises of 10% presentation and 20% quiz. The quiz may or may not be announced beforehand.

Attendance policy:

Institute rule will apply. Appropriate action will be taken in case the attendance of a student in the course is not found satisfactory.

A student may be deregistered from the course if the attendance (considered before 17th October 2025) is below 30%.

Note 1: Class timing in very few occasions (for example, just before exam) in discussion with student may be exchanged with tutorial timing. For example, 15th Sep class exchanged with 9th Sep tutorial time; 23rd Oct class exchanged with 14th Oct tutorial time.

Note 2: Office hour: Thursday 11.00 am -11.45 am (tentative)

This handout is a rough outline of the course and may change as the course progresses depending on the student's performance.