

CHM421A/CHM321A

Physical Chemistry - I

First course handout

Instructor: Mainak Sadhukhan

Indian Institute of Technology Kanpur

- Recapitulation of classical mechanics and old quantum theory
- Formalism of modern quantum mechanics
- Some solvable models in one-dimension: Free particle, particle in n-dimensional box, harmonic oscillator
- Angular momentum
- Hydrogen atom
- Approximate methods: Perturbation theory and variational theory with examples

- Assignments may be given for practice
- A quiz will cover 20% marks
- Mid-semester examination will cover 40% marks
- End-semester examination will cover 40% marks
- No pro-rating is admissible
- End-semester make-up examination can only be admissible for medical emergency, properly approved by authorities (SPGC/SUGC)

Books

- 1 Quantum Mechanics, J. Powell and B. Crasemann, Dover Publications
- 2 Modern Quantum Mechanics, J. J. Sakurai and J. Napolitano, Pearson Education India
- 3 Quantum Mechanics, Eugen Merzbacher, Wiley India
- 4 Introduction to Quantum Mechanics, D. J. Griffith, Pearson Education India
- 5 Quantum Mechanics, Albert Messiah, Dover Publications

Online resources

The instructor will mention possible online resources during teaching.

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The students are very much encouraged to contact the instructor whenever needed