

Introductory Quantum Chemistry - Video course

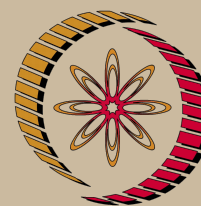
COURSE OUTLINE

The course will introduce quantum mechanics as applied to chemistry and would be structured such that B.Sc. students can follow, provided they have familiarity with differential equations.

COURSE DETAIL

Module No.	Topic/s	Lectures
1	Introduction to Quantum Mechanics: wave particle duality, uncertainty principle, standing waves, stationary states, atomic orbitals, path integrals and random walks.	5
2	Postulates of Quantum Mechanics	3
3	Particle in a box, particle in a box of finite depth	3
4	The free particle, and the derivation of the uncertainty principle	3
5	Particle encountering a barrier, tunnelling. Tunnelling in chemistry	2
6	Particle in a ring	1
7	The Harmonic Oscillator	4
8	Particle on a sphere	3
9	The Hydrogen Atom	6
10	The variation and perturbation method	4
11	Time dependent problems	4
12	Hydrogen Molecule ion, Born Oppenheimer approximation, LCAOMO method	4

References:



NP-TEL

NPTEL

<http://nptel.iitm.ac.in>

Chemistry and Biochemistry

Pre-requisites:

Familiarity with differential equations

Hyperlinks:

Educational Videos on Youtube

Coordinators:

Prof. K.L. Sebastian
Department of Inorganic and Physical Chemistry IISc Bangalore

1. Pauling and Wilson, Introduction to Quantum Mechanics, Dover Edition
2. Schwabl, Quantum Mechanics, Springer Books
3. P.M. Mathews and Venkatesan, Quantum Mechanics, Tata McGraw Hill