Semester	AUG 2022
Open to semester	5,11
Course code	**PH3124**
Course title	**Quantum Mechanics ? I***
Credits	4 /
Course Coordinator & participating faculty (if any)	Arijit Bhattacharyay
Nature of Course	Lectures
Pre-requisites	No pre-requisites
Objectives (goals, type of students for whom useful, outcome etc)	The course will introduce you to the basics of quantum mechanics on the basis and fundamentals of which you would be able to do higher level courses.
Course contents (details of topics /sections with no. of lectures for each)	The course will start with the formalism (using Dirac's notation) of a quantum mechanical state vector and the vector space. We would understand basic linear algebra of single particle quantum mechanics and would relate these methods to the observations of spin systems and Stern-Gerlach experiment. Then we would consider time evolution of a quantum state, dynamical equations, the role of the Hamiltonian in this evolution. This would be followed by moving to continuum and wave functions and the dynamics of wave functions (Schroedinger Equation). Then, we will discuss various solutions of Schroedinger equation in one-dimension and spherically symmetric 3-dimensional systems and you will get introduced to angular momentum states. Then we will consider the Schroedinger equation for a charge particle in electromagnetic field, emergence of paramagnetism and diamagnetism and Landau levels. After this we will go back to the basics of quantum mechanics using the path integral methods due to Feynman and would also discuss some fundamental issues like Bell's inequality, notion of hidden variables, incompatibility of the notion of hidden variables with quantum mechanics etc.
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-two quizzes of each 10%%
Suggested readings (with full list of authors, publisher, year,	1. Modern Quantum Mechanics by J. J. Sakurai 2. Introduction to Quantum Mechanics by D. J. Griffiths

edn etc.)	3. Quantum Mechanics by E. Merzbacher 4. Quantum Mechanics and Path Integrals, R.P. Feynman and A.R. Hibbs