

1	Course code	CHM 231
2	Course Title	Physical Chemistry
3	Credits	4
4	Course Coordinator & participating faculty (if any)	Jatish Kumar* and Janardan Kundu
5	Nature of Course (Please keep the appropriate one only)	L-lecture alone
6	Pre-requisites (if any)	None
7	Objectives & Outcomes (goals, students for whom offered, outcomes etc.)	<p>Physical chemistry is the branch of chemistry, which applies the rules of classical and quantum physics, to help elucidate various phenomena happening in Chemistry. It is essential to study Physical Chemistry, in order to understand the physical aspects of why a given chemical reaction happens/does not happen/what to do to make it happen/how much energy can we gain from it/ etc. In this course, we will cover major areas of physical chemistry such as chemical equilibria, phase equilibria, solutions, electrochemistry and basic statistical mechanics. These branches have far-flung impact on understanding the fundamentals of various process and they find applications in areas as diverse as material science, biochemistry, and pharmaceutical sciences. With this course, the students will get exposure to the most important domains of physical chemistry describing the microscopic and macroscopic world as well as the connection between these two domains. The course will lay the foundation for a student who wants to take up and learn related advanced topics in physical chemistry.</p> <p>Open in semesters/programs - IV</p>
8	Course contents (section wise listing of topics with no. of lectures for each If course is shared by faculty, topics taken by each faculty to be mentioned separately)	<ul style="list-style-type: none"> • Chemical equilibrium [8] • Phase equilibria, Phase Diagram, Phase Transformations [12] • Ideal and non-ideal solutions [6] • Electrochemistry [6] • Basic statistical mechanics [6]: macro and microstates, partition functions, disorder and statistical entropy.

9	Evaluation components with weightage Pl keep weightage for end sem exam-30-40%, mid sem exam-30-40% & continuous assessment-30-40%	<ul style="list-style-type: none"> a. Mid-sem examination - 30% b. Continuous Assessment - 30% (15% before mid-sem and 15% after mid-sem) c. End-sem examination - 40%
10	Suggested readings (full list with authors, publisher, year, edn etc. for each)	<ul style="list-style-type: none"> • Physical Chemistry: A Molecular Approach. Donald A. Mcquarrie, Simon D. John. • Physical Chemistry (10th Ed.) P. W. Atkins, & Julio de Paula, Oxford University Press. • Physical Chemistry (4th Ed.) R. J. Silbey, R. A. Alberty, M. G. Bawendi. • Physical Chemistry (6th Ed.) Ira N. Levine.