

Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa		
Name of Faculty: Ms. Sampada Bhide	Subject: Chemistry	
Paper code: CHC – 204 (Physical Chemistry I)	Program/Course: S.Y. B.Sc.	Division: -
Academic year: 2024 - 2025	Semester: IV	Total Lectures: 15 (Theory)
Course Objectives: 1. To study the laws of thermodynamics and various state functions 2. To understand rates of chemical reactions of zero, first and second order. 3. To introduce the composition of nucleus and study the applications of radioisotopes. 4. To know the photo-physical processes and their significance.		
Course Learning Outcome: 1. calculate and explain various thermodynamic parameters of chemical reactions. 2. differentiate between different nuclear counters. 3. estimate quantum yields of photochemical reactions.		

4. compare the strength of the acids. 5. determine graphically order of reaction and estimate the energy of activation. 6. estimate the stability constant of various complexes.							
Month	Lectures From	Lectures To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/Assignment	ICT Tools	Reference books
January	01/01/2025	04/01/2025	01	The concept of reaction rates. Law of Mass action,		Smart board	Ref 1 and 2
January	06/01/2025	11/01/2025	01	effect of temperature, pressure and catalyst on reaction rates. Order and molecularity of a reaction.		Smart board	Ref 1 and 2
January	13/01/2025	18/01/2025	01	Derivation of integrated rate equations for zero, first order reactions		Smart board	Ref 1 and 2
January	20/01/2025	25/01/2025	01	Derivation of integrated rate equations second order reactions (both for equal and unequal concentrations of reactants)		Smart board	Ref 1 and 2
January-February	27/01/2025	01/02/2025	01	Solving numerical problems		Smart board	Ref 1 and 2
February	03/02/2025	08/02/2025	01	Half-life of a reaction.		Smart board	Ref 1 and 2
February	10/02/2025	15/02/2025	01	General methods for determination of order of a reaction.		Smart board	Ref 1 and 2

February	17/02/2025	22/02/2025	01	Concept of activation energy and its calculation from Arrhenius equation.		Smart board	Ref 1 and 2
February-March	24/02/2025	01/03/2025	01	Concept of activation energy and its calculation from Arrhenius equation, solving numerical		Smart board	Ref 1 and 2
March	03/03/2025	08/03/2025	01	Introduction to theories of reaction rates		Smart board	Ref 1 and 2
March	10/03/2025	15/03/2025	01	Solving numerical		Smart board	Ref 1 and 2
March	17/03/2025	22/03/2025	01	Nuclear Fission, discovery, nuclear reactor – essential parts of the nuclear reactor, classification of nuclear reactors,		Smart board	Ref 1 and 6
March	24/03/2025	29/03/2025	01	Breeder reactor, chain reaction and its control, reprocessing of spent fuel,		Smart board	Ref 1 and 6
March-April	31/03/2025	05/04/2025	01	application of radio isotopes- in the field of medicine, agriculture, industry, as traces and in carbon dating.		Smart board	Ref 1 and 6

Reference Books:

1. Bahl and G.D. Tuli, Essentials of Physical Chemistry, S. Chand Publication, 2019, New Delhi, 26th Edition.
2. P. Sharma and Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 2018, Jalandhar, Delhi, 1st edition.
3. J.N. Gurtu, Physical Chemistry, Pragati Prakashan, 2020, Meerut, 9th edition.
4. G. Raj, Advanced Physical Chemistry, Goel publication, 36th edition, 2010, Meerut.
5. R. L. Madan, Chemistry for degree students, S Chand publications, 2017, New Delhi, 1st edition.
6. U. N. Dash, Nuclear Chemistry, S. Chand & Sons Publications, 2010, New Delhi.
7. K. K. Rohatgi-Mukherji, Fundamentals of Photochemistry, 3rd edition, New Age international Publishers, 2017, New Delhi.
8. H. J. Arnikar, Essentials of Nuclear Chemistry, New Age International Publishers, New Delhi, 2011, Reprint 2018, 4th edition.

*** Assessment Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Practical Exam	25
Semester End Exam	60

Total 100

*Best two ISA will be considered