

**Revision of the course number: CHM222A**

**Title of the course: Basic Physical Chemistry-II**

**Credit details: 3-0-0-0 (9)**

**Objective of the course:** The fundamental aspects of kinetics, kinetic theory of gas, transport phenomena, electrolytes, modern and emerging topics in surfaces and interfaces will be taught in this course.

**Specialized Infrastructure requirement:** Nil

**Modular/Full semester:** Full semester

**Instructional aspects:**

**Course content:** (This will go in the "Courses of Study" book. Please note that the duration of each lecture is 50 minutes.)

**Lecture-wise break-up: (please note that the duration of each lecture is 50 minutes)**

<b>Topic</b>	<b>Suggested number of lectures</b>
Kinetic Preliminaries: Local equilibrium, phenomenological laws, parallel and consecutive reactions, steady state approximation, preequilibrium	4
Kinetics of complex reactions: Enzyme kinetics, free radical chain reaction, polymerization	4
Kinetic theory of Gases: Taxonomy of collisions, derivation of mechanical pressure equation and ideal gas equation from kinetic theory	6
Transport properties: transport coefficients, thermal conductivity, viscosity, diffusion, calculation of transport coefficients from kinetic theory	6
Theory of electrolytic solutions, ionic conductivity, Kohlrausch's law, transport numbers	6
Surfaces and Interfaces: Gibbs dividing surfaces and interfaces, solids and surfaces, structure and morphology of surfaces, adsorption, adsorption isotherms, mechanisms of surface catalyzed reactions, Flexible topics in surfaces and interfaces: modern surface analytical tools like STM and AFM, catalytic converters, Haber-Bosch synthesis, 2D materials etc.	14
<b>Total number of lectures</b>	<b>40</b>

**Suggested text and reference material:**

1. P. W. Atkins and Julio de Paula, Physical Chemistry
2. I. N. Levine, Physical Chemistry
3. R. J. Silbey, R. A. Alberty, and M. G. Bawendi, Physical Chemistry
4. D. A. McQuarrie, J. D. Simon, Physical Chemistry: A molecular approach

**Main differences suggested in this review:**

The course contents are modified to add newer topic and modern topics that are relevant to physical chemistry.

Faculty members of Physical Chemistry, CHM

(Names and signatures of the committee members)



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