

PHYSICAL CHEMISTRY (BS-ADP 6thSemester)

Module Code:	Chem-319
Module title:	Chemical Kinetics
Name of Scheme:	BS-ADP 6thSemester
Department:	School of Chemistry
Faculty:	Science
Module Type:	Compulsory
Module Rating:	2 credits

OBJECTIVES

Students will acquire knowledge to enable themselves to understand the fundamental principles of chemical kinetics and laws of thermodynamics. Students will also be able to explore the insights of reactions occurring in solution phase and perform related calculations.

SYLLABUS OUTLINES

Chemical kinetics

Concept of rate law and order of reaction, Kinetics of 3rd order reaction with different concentrations and molecular identity, kinetics of opposing, parallel and consecutive reactions, basic experimental methods, Kinetics of thermally excited chain reactions like reaction of H₂ and Br₂, kinetics of thermal decomposition of ozone, N₂O₅ and CH₃CHO.

Effect of temperature on reaction rate, mathematical treatment of collision theory and transition state theory of bimolecular reactions, Comparison of collision theory and Transition state theory with Arrhenius theory, Calculation of entropy and enthalpy by Eyring equation, effect of ionic strength, hydrostatic pressure on the rate of reaction in solution.

RECOMMENDED BOOKS

1. Atkin, P. and Paula, J. D., Atkin's Physical Chemistry, 2nd ed., Oxford University Press, (2002).
2. Bhatti, H. N. and Farooqi, Z. H., Modern Physical Chemistry, Revised ed., Caravan Book House, (2014).
3. Physical Chemistry by Kundu, N and Jain, S.K., S. Chand and Company Ltd. 1984.
4. Fundamentals of Chemical kinetics by Logan, S.R., Longman Group Ltd. 1996.
5. Elementary reaction kinetics by Latham. J.L. and Burgess, A.E., 3rd Ed., Butterworths, London, 1997.
6. Physical Chemistry by Atkins, P.W., 5th Ed., W.H. Freeman and Company, New York, 1994.
7. Physical Chemistry by Alberty, R.A. and Silbey, R.J., John Wiley, New York, 1995.
8. Physical Chemistry by Engel, T. and Ried, P., 1st Ed., Pearson education, Inc. 2006.