

INORGANIC CHEMISTRY (BS-ADP 7th Semester)

Module Code:	Chem-412
Module title:	Kinetic & Thermodynamic
Name of Scheme:	BS-ADP 7th Semester
Department:	School of Chemistry
Faculty:	Science
Module Type:	Compulsory
Module Rating:	2 credits

OBJECTIVES:

The aim of this course is to provide the concepts for better understanding of advance study in inorganic chemistry and other interdisciplinary subject related to inorganic chemistry. The students will learn about kinetics and mechanisms of reaction of coordination compounds, reactions in aqueous and non-aqueous solvents and radioactivity.

SYLLABUS OUTLINE:

1. Kinetic aspects

Introduction of reaction rate law and mechanism of stationary state approximation. Type of reactions, nucleophilic displacements, effective collisions. Dis-placement in square planar complexes, trans-effect, replacement in octahedral complexes, inert and labile complexes, (VBT, CFT explanation), Inner and outer sphere exchange reactions.

2. Thermodynamic aspects:

Thermodynamic and kinetic stability, Interpretation of stability, Role of thermodynamics in interpretative chemistry, The lattice energy as a criterion of bond type, Quantitative uses of the lattice energy, The Kapustunskii equations, The stabilization of high oxidation states by fluorine and oxygen, The stabilization of low oxidation states by large anions, Halogen exchange reaction, The stability of halides containing protonated bases.

RECOMMENDED BOOKS:

1. Coordination Chemistry by B.A. Basallo and R. Johnson 1972 W.A. Benhamen, London.
2. Haq Nawaz Bhatti and Rabia Rehman, "Advanced Inorganic Chemistry", Carvan Book House Lahore.
3. Some Thermodynamic Aspects of Inorganic Chemistry By David Arthur Johnson.
4. Chemical thermodynamics: with special reference to inorganic chemistry by David J. G. Ives.