Course Title **Inorganic Chemistry**

Course Code CH-803

Credit Hours 3-0

Prerequisite Nil

Course Objectives

Inorganic Chemistry, a core branch of chemistry course, will be utilized to teach advanced concepts and theories of Inorganic Chemistry.

Course Outcomes

The students would be able to understand and implement complex theories of inorganic and coordination chemistry, as well as enhance their electronic spectroscopy knowledge. The students would be able to understand the concept of bonding theories and symmetry, group theory and its applications. Students will be able to understand Term diagrams of various d-systems. Students will be able to interpret the crystal field diagrams. Students will be able to understand and apply chemistry of non-aqueous solvents.

Course Contents

Recap of basic introduction to bonding theories, coordination chemistry (key concepts, synthesis, isomerism, and general reactions, terms symbols, quantum numbers and their rules, Russel Saunders coupling (spin-spin coupling, orbital-orbital coupling, spin-orbit coupling, degeneracy of energy levels), ground and excited states terms symbols. discussion of examples for s, d, p, f, h., molecular symmetry, elements and symmetry operations, operator properties and point group notations, multiplication of symmetry operations, bonding in d-block metal complexes; crystal field theory. high and low spin octahedral complexes; tetrahedral and square planar crystal field, ligand field theory. electronic spectra; selection rules; magnetic properties, Jahn teller effect. color and magnetism in transition complexes.

Recommended Books

1. A.B.P. Lever, Introduction to Inorganic Electronic Spectroscopy, Elsevier, (1991).
2. F.A. Cotton & G. Wilkinson, Chemical Applications of Group Theory, 3rd ed., John Wiley, New York (1990).
3. Inorganic Chemistry, Catherine Housecroft and Alan Sharpe, Pearson (2005).