

Semester	AUG 2023
Open to semester	3
Course code	CH2113
Course title	Principles of Inorganic Chemistry
Credits	3 /
Course Coordinator & participating faculty (if any)	R. Boomi Shankar* and R. Vaidhyanathan
Nature of Course	Lectures and Tutorials
Pre-requisites	None
Objectives (goals, type of students for whom useful, outcome etc)	This course will introduce students to the rudimentary principles behind the chemistry of inorganic compounds. At the end of the course, the students should be able to derive the structure of various covalent compounds, apply the concept of acid-base chemistry to various reactions and as a whole understand the importance of the elements of the periodic table for the various facets of chemistry.
Course contents (details of topics /sections with no. of lectures for each)	<p>1) Models describing covalent bonding in chemical compounds. Examples dealing with the Lewis theory, VSEPR model, valance and molecular orbital theories for di- and polyatomic molecules. (7 hours)</p> <p>2) Acids and Bases: Concepts of pH, pKa and pKb. Solvent leveling. Various models of Acids and Bases. Reaction and properties of Lewis acids and Bases, Superacids, Magic acid, Hard and soft Acids and Bases. Solvents as acids and bases, Heterogeneous acid-base reactions. (5 hours)</p> <p>3) Oxidation and Reduction: Redox half-reaction, standard potentials, The electrochemical series, The Nernst equation, Redox stability, reactions with water, oxidation by atmospheric oxygen, disproportionation and comproportionation, Latimer diagrams, Frost diagrams, The dependence of stability on pH, Redox titration. (4 hours)</p> <p>4) Representative Chemistry of Transition metals and main-group elements. Basics of transition metal complexes: Introduction to coordination compounds, Crystal field theory. Basics of Main group chemistry: Periodic trends of S and P</p>

	block elements. Introduction to organometallic and bioinorganic chemistry. (12 hours)
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-20 % (Quizzes)%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Inorganic Chemistry: Shriver and Atkins, 4th Edn., Oxford University Press 2. Inorganic Chemistry by Huheey, Keiter, Keiter, Medhi (4th Ed.) 3. Concise Inorganic Chemistry: J. D. Lee (5th Ed.)