Code	Subject Title	Cr. Hrs	Semester
CHEM-315	Inorganic Chemistry	4	VI
Year	Discipline		
3	Chemistry-I, II		

SYLLABUS OUTLINE:

1. **The Covalent Bond (Structure & Reactivity):**
   - **(a)** VSEPR model followed by VB theory (Hybridization, Resonance etc.,) explanation of the structure of AB_2, AB_3, AB_2E, AB_4, AB_3E, AB_2E_2, AB_5, AB_3E_3, AB_6, AB_5E, AB_4E_2, AB_7, AB_6E, AB_8 and AB_9 type molecules.
   - **(b)** Discussion of molecular orbitals and molecular structures of homonuclear molecules and ions, heteronuclear diatomic and polyatomic molecules and ions.
   - **(c)** Bent bond, bridge bond, four electrons-three centre bond.
   - **(d)** Shielding effect and effective nuclear charge, Factors affecting the magnitude of σ and $\mathbf{Z_{eff}}$ and their variation in the period table, Applications of Slater's rules, Polarization of ions, Fajan's rules and its applications.

2. **Co-ordination compounds: (synthesis and properties)**
   Preparative methods. Techniques of studying complexes, stability constants. The spectrochemical series and colour of metal complexes. Diamagnetism and Para magnetism, stereochemistry, John-Teller Theorem, Isomerism. Role of metal complexes in analytical chemistry, industry and nature.

3. **Chemistry of the Lanthanides and Actinides**
   Nomenclature, Position in periodic table, occurrence, Separation, and electronic configuration, oxidation States, Complex Formation, shapes of 'f'-orbitals, applications.

RECOMMENDED BOOKS:

1. J H Huheey, Inorganic Chemisry - Principles, structure and reactivity, Harper and Row Publisher, Inc. New York (2008)
2. J. D. Lee, Concise Inorganic Chemistry, Elbs with Chapman and Hall, London (2007).
3. Advanced Inorganic Chemistry F.A. Cotton and G.Wilkineon 6th Ed. 2001, Interscience, Publishers, London.
4. Coordination Compounds by S.F.A. Kettle, 1999, Nelson , (Nauohi Kenya).
5. Coordination Chemistry by B.A. Basallo and R. Johnson 1972 W.A. Benhamen, London.