

FCYC401	Inorganic Chemistry-III	3-0-0	3
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#### Module-I

##### Chemistry of Elements of Second and Third Transition Series

General Characteristics, comparative treatment with their 3d-analogous in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry. [3hrs]

##### Chemistry of Elements of Lanthanide Elements

Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds [3hrs]

##### Chemistry of Elements of Actinides

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, similarities between the latter actinides and latter lanthanides [3hrs]

#### Module-II

##### Coordination compounds

Warner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes. [6hrs]

#### Module-III

##### Metal –Ligand Bonding in Transition Metal Complexes

Limitations of valence bond theory, an elementary idea of crystal field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters. [8hrs]

#### Module-IV

##### Organometallic Chemistry (07Hrs)

Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding and applications of alkyls and aryls of Li, Al, Hg, Sn, a brief account of meta-ethylenic complexes and homogeneous hydrogenation, mononuclear carbonyls and the nature of bonding in metal carbonyls. [7hrs]

##### Essential readings:

1. J.D. Lee, Concise Inorganic Chemistry, 5th edition, Blackwell Publishing, 2008
2. Huheey, Keiter and Keiter, Inorganic chemistry Principle, structure and reactivity. 4<sup>th</sup>edn
3. Inorganic Chemistry R.D.Madan, S.Chand Publication
4. Basic Inorganic Chemistry Cotton &Willikinson