

Revision of the course number: CHM242

Title of the course: Basic Inorganic Chemistry-II

Credit details: 9

Objective of the course: The fundamental aspects of inorganic chemistry and its applications will be taught in this course.

Specialized Infrastructure requirement: Nil

Instructional aspects:

Course content: (This will go in the "Courses of Study" book. Please note that the duration of each lecture is 50 minutes.)

Lecture-wise break-up: (please note that the duration of each lecture is 50 minutes)

Topic	Suggested number of lectures
Molecular symmetry, point groups and character tables	6
Chemistry of selective main group elements and their compounds.	6
Transition metal chemistry, isomerism, structure and bonding, crystal field, and ligand field theory of transition metal complexes, thermodynamic and kinetic stability	6
Electronic spectroscopy and magnetic behavior of transition metal complex, Chemistry of f-block elements	6
Transuranium elements, radiations and radioactive decay, magic number, nuclear spin, half-life, nuclear fission & fusion, practical application of radioisotopes	6
Organometallic Chemistry: Sigma bonded ligands (Metal-Alkyl, Aryl, M-hydrides, M-X (X=Si, B, etc). Pi-bonded ligands (Alkynes, alkenes) Sigma and Pi-bonded ligands (CO, Phosphines, Carbenes, etc).	6
Homogeneous Catalysis: Elementary organometallic reactions, Hydrogenation, Cross-coupling, Carbonylation, Reductive Amination. Heterogeneous Catalysis: Modern trends in hydrogenation of various functional groups (Acid, ester, nitrile, etc). Polymerization reaction	6
Total number of lectures	42


Suggested text and reference material:


1. Inorganic Chemistry-Principles of Structure and Reactivity, 4thEdn., J. E. Huheey, E. A. Keiter and R. L. Keiter, Harper-Collins, NY, 1993
2. Concepts and Models of Inorganic Chemsitry, 3rdEdn., B. Douglas, D. McDaniel and J. Alexander, John Wiley, New York. 1993
3. Shriver and Atkins Inorganic Chemistry, 5th Edn., Oxford University Press, 2009.
4. Chemistry of the Elements, 2ndEdn., N. N. Greenwood and A. Earnshaw, Pergamon, Oxford, 2005
5. F. A. Cotton, Chemical applications of Group Theory 3rd ed., John Wiley and Sons, **2003**
6. A. Vincent, Molecular Symmetry and Group Theory: A Programmed Introduction to Chemical Applications, 2nd Edition, John Wiley and Sons **2001**
7. F. Albert Cotton, Carlos A. Murillo, and Manfred Bochmann, Advanced Inorganic Chemistry, 6th Ed. Wiley Interscience Publication **2001**.
8. Christoph Elschenbroich, Organometallics (Third edition); Wiley-VCH, Weinheim, **2006**. ISBN: 3527293906
9. R. H. Crabtree, The Organometallic Chemistry of the Transition Metals, 4th Ed.; Wiley-Interscience, **2005**. ISBN: 0471662569.

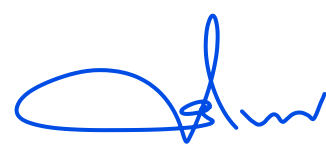
Main differences suggested in this review:

The course contents are modified to a larger extent by adding more newer topic as we had only one basic inorganic chemistry in the old curriculum.

Faculty members of Inorganic Chemistry, CHM
(Names and signatures of the committee members)


(Prof. S. P. Rath)


(Jitendra Bera)


Dr. T. G. Gopakumar
DUGC, CHM