Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa		
Name of Faculty: Ms. Varsha Sail	**Subject:** Chemistry	
Paper code: CHC-305	**Program:** T Y BSc	**Division:** A
Academic year: 2025 - 2026	**Semester:** VI	**Total Lectures: 15**
Course Objectives: : Recall key concepts of chemistry of coordination, organometallic compounds and basic concepts of bioinorganic and nanomaterials. Explain bonding, stability, preparation and properties of coordination compounds viz., electronic and magnetic, organometallic compounds, nanomaterials and the biological significance of metal complexes. Apply CFT and MOT, predict stability, structures, properties (electronic and magnetic) of coordination and organometallic compounds, articulate the role of nanomaterials and metal ions in biology. Analyse the interplay of bonding theory, electronic structure, and geometry to predict spectral, magnetic properties of coordination and organometallic compounds. Correlate the structural-functional role of bioinorganic systems and nanomaterials.		

Expected Course Outcome:

Students will learn the chemistry of preparation, properties of different types of organometallics, nanomaterial

Apply different theory to understand bonding in organometallics

Explore application of Nanomaterial

Student Learning Outcome:

learn the chemistry of preparation, properties of different types of organometallics, nanomaterial

Apply different theory to understand bonding in organometallics

Explore application of Nanomaterial

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
December 2025	1st	6th	1	.. Holiday		PPT, Smartboard, Quiz, Experiment	10.J.D. Lee, Concise Inorganic Chemistry by, Chaman, and Hall, 5th ed. (1996). 2. F. A. Cotton, G. Wilkinson, P. L. Gauss, Basic Inorganic Chemistry, 3rd Ed.; Wiley, (Reprint 2008). 3. N. N. Greenwood, A. Earnshaw, Chemistry of the Elements, Pergamon Press, 1st Ed.; (1984). 4. Glen E. Rodgers, Inorganic Chemistry, 3rd Edn., Brooks/Cole (2012). 5. F. A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry, 3 rd Edn. Wiley Eastern Ltd., (1993) 6. P. W. Atkins, T. Overton, J. Rourke, M. Weller, F. Armstrong, Shriver & Atkins Inorganic Chemistry, 5th Ed.; Oxford Publications, (2009). 7. J.E. Huheey, E.A. Keiter, R.L. Keiter, U.K. Medhi, Inorganic Chemistry – Principles of structure and reactivity by, 1st impression (2006) Pearson Education Publishers.
	8th	13th		Organometallic Chemistry General characteristics of various			
	15th	20th	1	types of organometallic compounds, viz, ionic, sigma-bonded and electron-deficient compounds			

Jan 26	5th	10th	1	EAN rule, 18 electron rule. Metal carbonyls: Preparation,	Calculatre EAN for list of compound.		8. K. V. S. Laxmi Devi, N. C. Patel, S.S. Dhume, A. Venkatachalam, S. P. Turakhia, Chhaya Dixit and R. A. Mirji, College Inorganic Chemistry for T.Y. B. Sc. 21st Edn, Himalaya Publishing House 9. A. Sharpe, Inorganic Chemistry, 3rd Edn. Pearson Education (2009). 10. Lesley E. Smart, Elaine A. Moore, Solid State Chemistry- An Introduction, 3rd Edn. Taylor and Francis, (2005) 11. B. Douglas, D. Mc. Daniels, J. Alexander, Concepts, Models of inorganic chemistry by, Mohan Wiley & Sons 3rd Edn (2007).
	12th	17th	1	ISA properties, structure and bonding in mononuclear metal carbonyls	Draw ball and stick model of metal carbonyls		
	19th	24th	1	Polynuclear metal carbonyl: Preparation and structures of Mn2(CO)10, Co2(CO)8 Fe2(CO)9 and Fe3(CO)12.			
	27th	31st	1	Metallocenes: Introduction, Ferrocene: synthesis, properties,	Visualize shape of ferrocene		
Feb 26	2nd	7th	1	structure and bonding on the basis of VBT and MOT			

	9th	14th	1	Nanomaterials Introduction and importance of nanomaterials,			
	16th	21st	1	quantum confinement and surface effects. Chemical methods of synthesis of nanomaterials.			
	23rd	28th	1	Characterization of nanomaterials (UV, XRD, TEM techniques).			
March 26	2nd	7th	1	holiday			
	9th	14th	1	Dimensions and forms of nanomaterials: nanofilms, nanolayers, nanotubes, nanowires, and nanoparticles.	Preparation of film and particle in lab		

	16th	21st	1	Properties and applications of nanomaterials.			
	23rd	28th	1	Properties and applications of nanomaterials.			
	30th	4th	1	revision			

Assessment Rubrics

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
Practical	-
Project	-

Semester End Exam	60