

	<p>americium.</p> <p>3. Fundamentals of Inorganic Electrochemistry Basic aspects of electrochemistry, electron transfer reactions at electrode surface, potential and electrochemical cells, voltammetric techniques, linear voltammetry, cyclic voltammetry; reversible, irreversible and quasi-reversible processes; applications of cyclic voltammetry with reference to ferrocenes, transition metal complexes.</p> <p>4. Inorganic medicinal chemistry Anticancer agents: Platinum and Ruthenium complexes as anticancer drugs, Cancer chemotherapy, phototherapy, radiotherapy using borane compounds, Chelation therapy, Gadolinium and technetium complexes as MRI contrast agents, X-ray contrast agents, Anti-arthritis drugs, Anti-bacterial agents (Ag, Hg, Zn and boron compounds), Antiseptic and anti-biotic, Deodorants and anti-perspirants, Anti-viral agents (influenza, herpes, hepatitis and HIV viruses), Li drugs.</p> <p>5. Nuclear Chemistry Radioactivity, Decay processes and decay energy, half-life of radioactive elements, Nuclear fission and fusion processes, Nuclear reactor components and functions, Q values for nuclear reactions, Nuclear waste management, Radiation detection principles, Chemical separation techniques of radioactive elements, Radio-analytical techniques, Activation analysis.</p>	<p>4 hr</p> <p>8 hr</p> <p>8 hr</p>
Pedagogy	Mainly lectures / tutorials / assignments / self-study or a combination of some of these could also be used to some extent.	
Text / Reference Books	<ol style="list-style-type: none"> 1. P.W. Atkins, T.L. Overton, J.P. Rourke, M.T. Weller & F.A. Armstrong 2010, <i>Shriver & Atkins' Inorganic Chemistry</i>, Oxford University Press, 2010, 5th Ed. 2. J.E. Huheey, E.A. Keiter & R.L. Keiter, <i>Inorganic Chemistry: Principles of structure and reactivity</i>, Pearson, 2014, 4th Ed. 3. J. D. Lee, <i>Concise Inorganic Chemistry</i>, Blackwell Science Wiley, 2015, 5th Ed. (Reprint) 4. F.A. Cotton, G. Wilkinson & P.L. Gaus, <i>Basic Inorganic Chemistry</i>, John Wiley 1995, 3rd Ed. 5. F.A. Cotton & G. Wilkinson, <i>Advanced Inorganic Chemistry</i>, Wiley Eastern, New Delhi, 1984, 3rd Ed. (4th & 5th Ed. preferred) 6. N. N. Greenwood & A. Earnshaw, <i>Chemistry of the Elements</i>, Pergamon Press, Exeter, Great Britain, 1984. 7. D. T. Sawyer, A. Sobkowak, J. L. Roberts Jr., <i>Electrochemistry for chemists</i>, John Wiley, Inc., New York, 1995, 2nd Ed. 	

	8. A. G. Sykes, <i>Advances in Inorganic Chemistry</i> , Academic Press Ltd., UK Ed. 1991. 9. H. J. Arnikaar, <i>Essentials of Nuclear Chemistry</i> , New Age Intl. Publishers, 2011, 4 th Revised Ed. 10. G. Friedlander, J. W. Kennedy, E. S. Macias, J. M. Miller, <i>Nuclear & Radiochemistry</i> , John Wiley & Sons, New York, 1981, 3 rd Ed.	
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Programme: M. Sc. Part-II Inorganic Chemistry

Course Code: ICC-505

Title of the Course: Experiments in Inorganic Chemistry

Number of Credits: 03

Effective from AY: 2019-20

Prerequisites for the course:	Students should have studied the courses ICC-401, ICC-402 and ICO-401 at M. Sc.-I level	No. of lectures
Course Objectives:	1. To introduce to practical knowledge in Inorganic Chemistry. 2. To learn techniques of crystallization of ligands and synthesis of coordination compounds 3. To learn characterization of compounds using different instruments 4. To provide experience of synthesis and characterization of materials 5. To introduce analysis of ores for metal content	
Course Outcomes:	1. Students will be in a position to understand general aspects involved in purification of ligands and synthesis of coordination of compounds 2. Students will be able to understand the methods for characterization of coordination compounds. 3. Students will be in a position to understand the solid state material synthesis and characterization. 4. Students will be able to separate metal ions by ion exchange chromatography. They will also gain knowledge about the analysis of ores and alloys	
Content:	<p>EXPERIMENTS IN INORGANIC CHEMISTRY <i>Total sixteen experiments to be performed from the following.</i></p> <p>Group – 1: Experiments in coordination chemistry: Ligand and complex synthesis, metal analysis (Minimum 3)</p> 1) Purification (distillation / recrystallization) of ligands like acacH, en, carboxylic acids etc) 2) Preparation of manganic tris(acetylacetonate) and estimation of manganese 3) Preparation of tris(thiourea) copper(I) sulfate and estimation of copper 4) Preparation of isomers; <i>cis</i> & <i>trans</i> dichloro-(ethylenediamine)-cobalt(III) chloride and estimation of cobalt 5) Preparation and resolution of tris(ethylenediamine)cobalt(III) ion and estimation of chloride 6) Preparation of <i>cis</i> and <i>trans</i> - potassium dioxalatodiaquo-chromate(III) and estimation of chromium 7) Preparation of nitro and nitrito-penta aminecobalt(III)chlorides and estimation of cobalt 8) IR spectral characterization of free ligands and coordinated ligands	18