

Curriculum and Credit Framework (CCF) - 2022, University of Calcutta
Proposed distribution of syllabus and Class load
Course: Chemistry Major, Semester-4
Paper: CHEM-H-CC8-4-Th, Inorganic Chemistry

Serial number	Number of lectures	Topic of the prescribed syllabus	Teaching faculty
1.	1	Elementary idea on standard redox potentials with sign conventions.	Dr. J. Gangopadhyay
2.	1	Nernst equation and formal potential.	Dr. J. Gangopadhyay
3.	3	Influence of complex formation, precipitation and change of pH on redox potentials	Dr. J. Gangopadhyay
4.	3	Feasibility of a redox titration, redox potential at the equivalence point, redox indicators.	Dr. J. Gangopadhyay
5.	2	Redox potential diagram (Latimer and Frost diagrams) of common elements and their applications.	Dr. J. Gangopadhyay
6.	1	Disproportionation and comproportionation reactions (typical examples).	Dr. J. Gangopadhyay
7.	2	Non-covalent interactions – examples of Ion-Dipole Interactions, Dipole-Dipole interactions, Dipole-Induced Dipole and Ion-Induced Dipole interactions, van der Waals or Dispersion Interactions	Dr. J. Chakraborty
8.	1	Halogen bonding	Dr. J. Chakraborty
9.	2	Cation- interactions, Anion- π interactions, π - π interactions,	Dr. J. Chakraborty
10.	2	Aromatic-Aromatic Interactions: Edge-to-face vs π - π Stacking Interactions,	Dr. J. Chakraborty
11.	1	N-H π interactions, Sulfur-aromatic interactions.	Dr. J. Chakraborty
12.	2	Werner's theory, ligands, IUPAC nomenclature	Dr. A. K. Barik
13.	2	Isomerism (constitutional and stereo isomerism, Geometrical and optical isomerism in square planar and octahedral complexes)	Dr. A. K. Barik
14.	1	VB description and its limitations.	Dr. A. K. Barik
15.	4	Elementary Crystal Field Theory: splitting of d^n configurations in octahedral, square planar,	Dr. A. K. Barik

		tetrahedral, trigonal bipyramidal (basic idea), square pyramidal (basic idea) and pentagonal bipyramidal (basic idea) fields	
16.	2	Crystal field stabilization energy (CFSE) in weak and strong fields; pairing energy, Spectrochemical series.	Dr. A. K. Barik
17.	2	Jahn-Teller distortion	Dr. A. K. Barik
18.	1	Octahedral site stabilization energy (OSSE).	Dr. A. K. Barik
19.	2	Metal-ligand bonding (MO concept, elementary idea), sigma- and pi-bonding in octahedral complexes (qualitative pictorial approach) and their effects on the oxidation states of transitional metals (examples).	Dr. A. K. Barik
20.	3	d-d transitions; L-S coupling; qualitative Orgel diagrams for $3d^1$ to $3d^9$ ions	Dr. A. K. Barik
21.	1	Racah parameter	Dr. A. K. Barik
22.	1	Selection rules for electronic spectral transitions; spectrochemical series of ligands	Dr. A. K. Barik
23.	1	Charge transfer spectra (elementary idea)	Dr. A. K. Barik
24.	4	Orbital and spin magnetic moments, spin only moments of d^n ions and their correlation with effective magnetic moments, including orbital contribution; quenching of magnetic moment: super exchange and antiferromagnetic interactions (elementary idea with examples only)	Dr. A. K. Barik