

Course Outcomes & Lesson Plan
Subject: Chemistry (BS-101 A, 1st/ 2nd Sem)

BS-101A CHEMISTRY (BS-101A)

- BS-101A. 1 Define the atomic and molecular structure.
- BS-101A. 2 Analyse the analytical techniques used in identification of molecules.
- BS-101A. 3 Explain the trends of Periodic properties.
- BS-101A. 4 Demonstrate the spatial arrangement of molecules.
- BS-101A. 5 Relate the thermodynamic Functions with Chemical equilibrium.
- BS-101A. 6 Explain the concept of organic reactions.

Lesson Plan

Name of the Faculty:		Dr. Niti Sakhuja	
Discipline:		B.Tech (CSE- AIML)	
Semester:		2 nd	
Subject:		Chemistry-BS 101A	
Work Load (Lecture/Practical) per week (In hours):		Lecture-4/Practical-2	
S.No	Lecture	Theory	

	No.	Topic (Including Assignment/Test/Quiz)	Pedagogy (PPT/Marker/Video Recording /Activity/Case Study)	Course Outcome
2.	L 1	Molecular orbitals of diatomic molecules (N ₂ , F ₂ O ₂ , CO)	Marker Board & PPT	CO 1 & CO 2
3.	L 2	Equations for atomic and molecular orbitals.	Marker Board & PPT	CO 1 & CO 2
4.	L 3	Energy level diagrams of diatomics.	Marker Board & PPT	CO 1 & CO 2
5.	L 4	Pi-molecular orbitals of benzene & butadiene	Marker Board & PPT	CO 1 & CO 2
7.	L 5	Aromaticity and Huckel Rule	Marker Board & PPT	CO 1 & CO 2
8.	L 6	Crystal field theory, its postulates	Marker Board & PPT	CO 1 & CO 2
9.	L 7	Energy level diagrams of [Co(NH ₃) ₆] ³⁺ , [Ni(CO) ₄], [PtCl ₂ (NH ₃) ₂]	Marker Board & PPT	CO 1 & CO 2
10.	L 8	Magnetic properties of metal complexes	Marker Board & PPT	CO 1 & CO 2
11.	L 9	Band structure of solids	Marker Board & PPT	CO 1 & CO 2
12.	L 10	Role of doping on band structures.	Marker Board & PPT	CO 1 & CO 2
10.		Assignment1	On Paper (Hard Copy)	

11.	L 11	Spectroscopic techniques and applications	Marker Board & PPT	CO 1 & CO 2
12.	L 12	Principles of spectroscopy	Marker Board & PPT	CO 1 & CO 2
13.	L 13	Selection rules	Marker Board & PPT	CO 1 & CO 2
14.	L 14	Electronic spectroscopy (basic concept).	Marker Board & PPT	CO 1 & CO 2
15.	L 15	Fluorescence & Phosphorescence	Marker Board & PPT	CO 1 & CO 2
16.	L 16	Applications of fluorescence in medicine	Marker Board & PPT	CO 1 & CO 2
17.	L 17	Vibrational spectroscopy of diatomic molecules	Marker Board & PPT	CO 1 & CO 2
18.	L 18	Rotational spectroscopy of diatomic molecules	Marker Board & PPT	CO 1 & CO 2
19.	L 19	Applications of Vibrational spectroscopy and Rotational spectroscopy	Marker Board & PPT	CO 1 & CO 2
20.	L 20	Basic concepts of Nuclear magnetic resonance	Marker Board & PPT	CO 1 & CO 2
21.	L 21	Magnetic resonance imaging,	Marker Board & PPT	CO 1 & CO 2
22.	L 22	Diffraction & Scattering	Marker Board & PPT	CO 1 & CO 2
20.		Test 1	On Paper (Hard Copy)	

21.	L 23	Use of free energy in chemical equilibria	Marker	CO 3 & CO 4
23.	L 24	Estimations of entropy	Marker	CO 3 & CO 4
24.	L 25	Estimations of free energy	Marker	CO 3 & CO 4
25.	L 26	Free energy and emf.	Marker	CO 3 & CO 4
26.	L 27	Cell potentials & applications.	Marker	CO 3 & CO 4
27.	L 28	Nernst Equation & its applications	Marker	CO 3 & CO 4
29.	L 29	Effective nuclear charge	Marker Board & PPT	CO 3 & CO 4
30.	L 30	Penetration of orbitals	Marker Board & PPT	CO 3 & CO 4
31.	L 31	variations of s, p, d and f orbital energies of atoms in the periodic table	Marker Board & PPT	CO 3 & CO 4
32.	L 32	Variations in electronic configurations	Marker Board & PPT	CO 3 & CO 4
33.	L 33	Variations in atomic and ionic sizes, ionization energies,	Marker Board & PPT	CO 3 & CO 4

34.	L 34	Variations in electron affinity and electronegativity	Marker Board & PPT	CO 3 & CO 4
35.	L 35	Variations in polarizability, oxidation states, coordination numbers and geometries	Marker Board & PPT	CO 3 & CO 4
36.	L 36	Hard soft acids and bases	Marker Board & PPT	CO 3 & CO 4
32.		Assignment 2	On Paper (Hard Copy)	
33.	L 37	structural isomers and stereoisomer	Marker Board & PPT	CO 3 & CO 4
34.	L 38	configurations and symmetry	Marker Board & PPT	CO 3 & CO 4
35.	L 39	chirality, enantiomers and its properties	Marker Board & PPT	CO 3 & CO 4
36.	L 40	Diastereomers and its properties	Marker Board & PPT	CO 3 & CO 4
37.	L 41	optical activity, absolute configurations	Marker Board & PPT	CO 3 & CO 4
38.	L 42	conformational analysis	Marker Board & PPT	CO 3 & CO 4
39.	L 43	Introduction to reactions involving substitution reactions	Marker Board & PPT	CO 3 & CO 4

40.	L 44	Elimination, Addition, Oxidation, reactions with mechanism.	Marker Board & PPT	CO 3 & CO 4
41.	L 45	Synthesis of a commonly used drug	Marker Board	CO 3 & CO 4
42.	L 46	Synthesis of paracetamol & its uses	Marker Board	CO 3 & CO 4
43.	L 47	Synthesis of a commonly used drug Aspirin & its uses	Marker Board & PPT	CO 3 & CO 4
44.		Test 2	On Paper (Hard Copy)	

