**Name of Assistant Professor: Seema kashyap**

**Class and section: B.Sc -Ist N.M & Med. (Sem- Ist)**

**Major Chemistry -1 Lesson Plan: (From Aug 2025 - Nov 2025)**

# Chemistry Lesson Plan – Semester (16 Weeks)

## Weekly Lesson Plan (Theory + Practical)

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| Week | Unit / Topics | Teaching Method | Activities / Assignments |
|  Aug 1st week | Unit I – Atomic Structure: Dual behaviour of matter, de Broglie relation, Heisenberg uncertainty principle | Lecture + PPT | Short quiz on wave–particle duality |
| Aug 2nd week | Atomic orbitals, quantum numbers, Ψ and Ψ² | Lecture + Problem-solving | Practice problems on quantum numbers |
| Aug 3rd Week  | Shapes of orbitals (s, p, d, f), rules for electron filling | Chalk & board + diagrams | Draw orbital shapes |
| Aug 4th Week | Periodic properties: atomic/ionic radii, ionisation energy, electronegativity | Lecture + Examples | Assignment |
|  Sept 1ST Week | Unit II – Gaseous State: Kinetic theory, Maxwell distribution, velocities | Lecture + Numerical | Numerical problems on RMS/average/most probable velocity |
| Sept 2nd Week | Collision diameter, collision number, mean free path | Lecture + Illustrations | Class discussion on gas collisions |
| Sept 3rd Week | Real gases, deviations, Van der Waals equation (concept) | Lecture + Graphs | Draw compressibility curves |
| Sept 4th week | Critical phenomenon: Tc, Pc, Vc, compressibility factor | Lecture + Examples | Assignment  |
| Oct 1st Week | Unit III – Structure & Bonding: Resonance, inductive effect, hyperconjugation, electromeric effect | Lecture + Mechanism diagrams | Compare resonance vs hyperconjugation (class activity) |
| Oct 2nd Week | Van der Waals interactions, curved arrow notation, bond fission | Board work + Mechanism examples | Mechanism drawing practice |
| Oct 3rd Week  | Reagents: electrophiles & nucleophiles, organic reaction types (substitution, addition, elimination) | Lecture + Flow charts | Group work on SN1, SN2, E1, E2 |
| Oct 4th Week | Isomerization, pericyclic reactions, reactive intermediates (carbocations, | Lecture + Problem- | Class test on  |
| Nov 1st Week | carbanions, free radicals, carbenes) | solving | Intermediates |
|  | Unit IV – Liquid State: Properties – surface tension, viscosity, refractive index, vapour pressure, optical rotation | Lecture + Lab demo | Lab demo: stalagmometer |
| Nov 2nd Week | Solid State: Classification of solids, laws of crystallography, Miller indices, Bravais lattices | Lecture + Crystal models | Worksheet: Miller indices practice |
| Nov 3rd Week | X-ray diffraction: Bragg’s law, Laue & powder methods | Lecture + Diagrams | Numerical problems on Bragg’s law |
| Nov 4th Week | Revision + Exam Preparation | Doubt-clearing session | Mock test |

## Practical Schedule (Parallel to Theory)

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| Experiment | Week |
| Acid–base titration (oxalic acid vs NaOH) | 2 |
| Redox titration (Fe²⁺ using KMnO₄) | 4 |
| Surface tension by stalagmometer | 7 |
| Preparation of m-Dinitrobenzene | 10 |
| Preparation of p-Bromoacetanilide | 13 |
| Revision + Viva + Record check | 15–16 |