**Lesson Plan**

**Name of Faculty : Mr. Sonu, Assistant Professor of Chemistry**

**Discipline : Computer Science and Engineering Semester : 1st (Odd)**

**Subject : Chemistry (BSC-102)**

**Lesson Plan Duration : 15 weeks (from Nov.2021-Feb.2022)**

**Work Load (Lecture/Practical) per week (in hours): Lectures-03 hours & Tutorial- 01 hour**

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| --- | --- | --- |
| **Week** | **Theory** | **Topic Covered Date and Remarks** |
| **Lecture- Day** | **Topic (Including Assignment/Test)** | **Date** | **HOD** | **Director- Principal** |
| 1st |  | Effective nuclear charge | 22.11.2021 |  |  |
|  | Penetration and energy of orbitals | 23.11.2021 |  |  |
|  | Polarizability and oxidation states | 24.11.2021 |  |  |
|  | Atomic and Ionic size | 25.11.2021 |  |  |
| 2nd |  | Ionization Energy and Electron affinity  | 29.11.2021 |  |  |
|  | Electronic configurations and electronegativity  | 30.11.2021 |  |  |
|  | HSAB Principle  | 01.12.2021 |  |  |
|  | Coordination number and geometries | 02.12.2021 |  |  |
| 3rd |  | Representation of 3D structures  | 06.12.2021 |  |  |
|  | Structural isomers  | 07.12.2021 |  |  |
|  |  Stereoisomers  | 08.12.2021 |  |  |
|  | Symmetry and chirality  | 09.12.2021 |  |  |
| 4th |  | Enantiomers and Diastereomers  | 13.12.2021 |  |  |
|  | Optical activity  | 14.12.2021 |  |  |
|  | Absolute configurations  | 15.12.2021 |  |  |
|  | Conformational analysis  | 16.12.2021 |  |  |
| 5th |  | Isomerism in transition metal complexes  | 20.12.2021 |  |  |
|  | Introduction of organic reactions | 21.12.2021 |  |  |
|  | Substitution reactions  | 22.12.2021 |  |  |
|  | Elimination reactions | 23.12.2021 |  |  |
| 6th |  | Cyclization and ring opening reactions  | 27.12.2021 |  |  |
|  | Oxidation and reduction | 28.12.2021 |  |  |
|  | Synthesis of a drug molecules | 29.12.2021 |  |  |
|  | Principles of spectroscopy  | 30.12.2021 |  |  |
| 7th |  | Selection rules  | 03.01.2022 |  |  |
|  | Electronic spectroscopy  | 04.01.2022 |  |  |
|  | Fluorescence and its applications  | 05.01.2022 |  |  |
|  | Vibrational and rotational spectroscopy  | 06.01.2022 |  |  |
| 8th |  |  Nuclear magnetic resonance (NMR) | 10.01.2022 |  |  |
|  | Magnetic resonance imaging (MRI) | 11.01.2022 |  |  |
|  | Surface characterization techniques  | 12.01.2022 |  |  |
|  | Diffraction and scattering  | 13.01.2022 |  |  |
| 9th |  | Ionic and dipolar interactions  | 17.01.2022 |  |  |
|  | Van der Waals forces  | 18.01.2022 |  |  |
|  | Equation of state for real gases  | 19.01.2022 |  |  |
|  | Critical phenomena | 20.01.2022 |  |  |
| 10th |  | Potential energy surfaces (PES) | 24.01.2022 |  |  |
|  | PES of H3, H2F and HCN  | 25.01.2022 |  |  |
|  | Trajectories on PES  | 26.01.2022 |  |  |
|  | **Minor Test 1st**  | 27.01.2022 |  |  |
| 11th |  | Thermodynamic functions  | 31.01.2022 |  |  |
|  | Estimation of Entropy & free energies  | 01.02.2022 |  |  |
|  | Free Energy and emf | 02.02.2022 |  |  |
|  | Cell potentials  | 03.02.2022 |  |  |
| 12th |  | Nernst equation and its applications  | 07.02.2022 |  |  |
|  | Water chemistry, corrosion.  | 08.02.2022 |  |  |
|  | Metallurgy through Ellingham Diagram | 09.02.2022 |  |  |
|  | Schrodinger wave equation  | 10.02.2022 |  |  |
| 13th |  | PIB solutions and wave function for hydrogen atom | 14.02.2022 |  |  |
|  | Molecular orbital for diatomic molecules and plots  | 15.02.2022 |  |  |
|  | Crystal Field theory  | 16.02.2022 |  |  |
|  | **Minor test 2nd**  | 17.02.2022 |  |  |
| 14th |  | Aromaticity | 21.02.2022 |  |  |
|  |  Magnetic properties | 22.02.2022 |  |  |
|  | Band structure of solids  | 23.02.2022 |  |  |
|  | Role of Doping on band structures  | 24.02.2022 |  |  |
| 15th |  | Query and Solution | 28.02.2022 |  |  |