**Lesson Plan**

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

**Discipline : Civil Engineering : 1st (Odd)**

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

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