**CURRICULUM PLAN 2024-25**

Odd Semester: I, III, V

**Dr. V. Bhasker Raj**

Department of Physics

**B.Sc. Physical Science – I Year, I Sem,**

**Core Paper: Mechanics**

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| Content | Allocation of Lectures | Month-wise Schedule followed | Tutorial/assignment/presentation etc |
| **Mechanics** |  |
| **Unit1: Review of vectors and ordinary differential equation:**Gradient of a scalar field, divergence and curl of vectors field, polar and axial vectorsSecond order homogeneous ordinary differential equations with constant coefficients(Operator Method Only). | 4 | 30-Aug to 12-Sep | Syllabus OverviewReference booksProblem solvingDerivations and Numericals |
| **Unit 2: Fundamentals of Dynamic:**Dynamics of a system of particles, centre of mass, determination of centre of mass fordiscrete and continuoussystems having spherical symmetryConservation of momentum and energy, Conservative and non-Conservative forces,work – energy theorem for conservative forces, force as a gradient of potential energy.Particle collision (Elastic and in-elastic collisions) | 7 | 13-Sept to 08-Oct | Derivations andNumericalsClass test on unit endDiscussion ofImportant questions |
| **Unit 3: Rotational Dynamics and Oscillatory Motion:** Angular momentum, torque, conservation of angular momentum, Moment of inertia,Theorem of parallel and perpendicular axes (statements only). Calculation of momentof inertia of discrete and continuous objects (1-D and 2-D).Idea of simple harmonic motion, differential equation of simple harmonic motion andits solution, Motion of simple pendulum, damped harmonic oscillator | 8 | 09-Oct to 5-Nov | Derivations andNumericalsDiscussion ofImportant questionsHome Register Checking |
| **Unit 4: Gravitation:** Newton’s Law of Gravitation, Motion of a particle in a central force field, Kepler’sLaws (statements only) | 3 | 06-Nov to 14-November | Derivations andNumericals |
| **Unit 5: Special Theory of Relativity:**Frames of reference, Galilean transformations, inertial and non-inertial frames,Michelson Morley’s Experiment, postulates of special theory of relativity, lengthcontraction, time dilation, relativistic transformation of velocity, relativistic variationof mass. | 8 | 15 November to 24 December |  Derivation, Numericals & Revision. Solving previous year Question papers. |