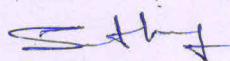Government College Jatusana (Rewari)

Lesson Plan for Session 2025-26

| Subject | Mathematics | Class | B.A II (Major) |
| Paper Title | Differential Equations-I | Assistant Professor | Mr. Sumit Kumar |

| August | |
|---|---|
| Week 1 | Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Solutions of differential equations of first order and first degree, Problem Solving and Practical's using MAXIMA software |
| Week 2 | Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Lagrange's equations, Clairaut's form and singular solutions. Orthogonal trajectories of one parameter families of curves in a plane, Problem Solving and Practical's using MAXIMA software |
| Week 3 | Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations. |
| Week 4 | Linear differential equation of second order with variable coefficients, Problem Solving and Practical's using MAXIMA software |
| September | |
| Week 1 | Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation, Problem Solving and Practical's using MAXIMA software |
| Week 2 | Solution of simultaneous differential equations, total differential equations. Genesis of Partial differential equations (PDE), Concept of linear and nonlinear PDEs. |
| Week 3 | Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x,y,z)p + Q(x,y,z)q = R(x,y,z)$, z) where $p = \partial z/\partial x$ and $q = \partial z/\partial y$ |
| Week 4 | Problem Solving and Practical's using MAXIMA software |
| October | |
| Week 1 | Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. |
| Week 2 | Mid Term |
| Week 3 | Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method. |
| Week 4 | Second Order Partial Differential Equations with Constant Coefficients |
| November | |
| Week 1 | Problem Solving and Practical's using MAXIMA software |
| Week 2 | Class test |
| Week 3 | Paper Discussion |
| Week 4 | Revision |

Sumit Kumar

Assistant Professor of Mathematics