LESSON PLAN

Session 2024-25

Subject- Mathematics Class- B.A./B.Sc. 2nd Year(Sem.-III)

Paper- Differential Equations-1 Course Code - B23-MAT-301

---

22 July 2024 to 24 August 2024

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, Geometrical meaning of a differential equation. Exact differential equations, integrating factors. 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.

26 August 2024 to 14 September 2024

Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations. Linear differential equation of second order with variable coefficients. Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation.

16 September 2024 to 05 October 2024

Solution of simultaneous differential equations, total differential equations. Genesis of Partial differential equations (PDE), Concept of linear and nonlinear PDEs. Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form:

$P(x,y,z)\ p + Q(x,y,z)\ q = R(x,y,z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$.

07 October 2024 to 26 October 2024

Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method.

04 November 2024 to 22 November 2024

Second Order Partial Differential Equations with Constant Coefficients.

Revision

SUDHIR PUJARA

(Associate Professor in Mathematics)