

SYLLABUS

First Order Differential Equations

Formation of Differential Equation, Differential Equation. Solution of Differential equation, Geometrical Interpretation of a Differential Equation, Linearly Independent and Dependent set of solutions, Fundamental Set of solutions. Wronskian.

Differential Equation of First Order and First Degree: Variables separable, Homogeneous Equations, Equation Reducible to Homogeneous form, Pfaffian Differential Equation, Exact Differential Equation. Integrating factor. Linear Differential equation, Principle of duality, Trajectories: Self Orthogonal family of curves.

Linear Differential Equations With Constant Coefficient

Linear Differential Equations with Constant Coefficients, Complementary Function,

Particular integral-I (e^{ax} , $\sin(ax + b)$, $\cos(ax + b)$, x^n),

Particular integral-II ($e^{ax}V(x)$, any other function)

Homogeneous and Simultaneous Linear Differential equation.

Homogeneous Linear Differential Equations(Euler-Cauchy Equation),

Simultaneous Linear Differential Equations,

Linear Differential Equation of Second order,

Differential Equations of first order and Higher Degree**Partial Differential Equations**

Partial Differential Equation, Linear and Non-linear Partial Differential Equation, Classification of First Order Partial Differential Equations, Formation of PDEs, Cauchy's Problem for First Order PDEs, Complete Integral, General solution of Lagrange Equation,

REFERENCES:

1. Earl A. Coddington (1961). An Introduction to Ordinary Differential Equations, Dover Publications.
2. Lawrence C. Evans (2010). Partial Differential Equations. (2nd edition). American Mathematical Society.
3. Ian.N.Sneddon, (2006), Elements of Partial Differential Equation, Dover Publications.
4. M.D. Raisinghania,(2021). Ordinary and Partial Differential equation (20th Edition), S. Chand.