Lesson Plan

Teacher Name : Chitra

M.Sc (Maths) Sem II

Differential Equations II

January : Linear second order equations, self adjoint equations, Riccatti's equation, Prüffer Transformation, Oscillatory & Non Oscillatory equations, Abel's formula, Common Zeros of solutions & their linear dependence

February : Sturm Theory, Autonomous System, path, critical points, types of critical points, Node, Centre, Saddle point, Spiral point, Stability of Critical points, Critical points and paths of linear systems, basic theorems.

March : Critical points & paths of non linear systems. Liapunov's function, Liapunov's direct method for stability of critical points, Limit cycle & Periodic solutions, Bendixson's non existence theorem, Half Path or Semi orbit, Limit set, Poincare Bendixson theorem, Index of a critical point.

April : Second Order Boundary value problems, Linear problems, Regular Linear B.V.P, Singular linear B.V.P, Sturm Liouville BVP Eigen value & Eigen Function. Orthogonality of functions, Greens function. Application of BVP. Use of Implicit function theorem and fixed point theorem for periodic solutions of Linear & Non Linear Equations.