

Lesson Plan.

Class - M.Sc. (Mathematics) Semester - I. Name of Teacher -
 Sub. - Theory of Ordinary Differential Eqns. Greta Anora
 Paper - M24-MAT-103. (Dep. of Mathematics)

Sr.No.	Weeks	Syllabus
1.	11/08 - 14/08	Existence and Uniqueness of Sol: Initial Value Problem, E-app. sol., Equivts. set of functions, Ascoli lemma, Cauchy Peano Existence Theorem & coroll.
2.	18/08 - 23/08	Uniqueness of Sol: Lipschitz condition, Gronwall Inequality involving approximate sol., Method of Successive approximation, Picard - Lindelof thm.
3.	25/08 - 30/08	Continuation of Solutions: Maximal Interval of Existence, Extension Theorem. Theory of L.D. Eqns.
4.	1/09 - 6/09	The Linear Diff. Eqns. of Order n , Basic theory of homogeneous linear eqns., Wronskian theory: Def.; N& Suff. cond. for linear dependence &
5.	8/09 - 13/09	Linear Independence of Sol. of Homogeneous LDE., Abel's Identity, Fundamental sets,
6.	15/09 - 20/09	More Wronskian theory, Reduction of Order, Non-homog. L.D. Eqns. of order n : Variation of Parameters. Revision Test, Assignment.
7.	24/09 - 27/09	Adjoint Eqns., Lagrange's Identity, Green's form Self-Adjoint Eqn. of 2nd order. L.D.E. of order n with constant coefficients. Characteristic Roots.
8.	29/09 - 4/10	Fundamental Sets, Linear 2nd Order Eqns., Superposition Principle, Ricatti's Eqn. Puffer's Transf.
9.	6/10 - 11/10	Oscillations of 2nd Order Diff. Eqns.: Zero of a Sol., Oscill. & Non-Oscill. Eqns., Abel's form Common zeros of Solutions and their linear dep.
10.	13/10 - 18/10	Sturm Separation, fundamental Comp. theorems. Elementary linear oscillations, Hille-Wintner's oscillations of $x'' + a(t)x = 0$ Thm.
11.	27/10 - 1/11	Second Order BVP. Linear Problems: Periodic Boundary cond., Regular linear BVP, Singular
12.	3/11 - 8/11	linear, non-linear BVP, Sturm Liouville BVP.
13.	10/11 - 24/11	Green's functions & Related thms., Picard's thm. Revision Test Seminars Mid-term exam

Lesson Plan (Odd Sem.)

Class - B.A. IIIrd Sem.

Subject - Elements of Diff. Eqs. I.

Paper - B23 - MAT-301

Name of Teacher - Greeta

Arora

(Dep. of Mathematics)

Sr. No.	Weeks	Syllabus
1.	22/07 - 26/07	Basic concepts and genesis of ordinary differential equations, Order and degree of
2.	28/07 - 2/08	first order and first degree, Exact diff. eqns, Integrating factor, First order
3.	4/08 - 8/08	higher degree eqns. Solvable for x, y, p , Lagrange's eqn, Clairaut's form and singular solutions
4.	11/08 - 14/08	Orthogonal trajectories of one parameter families of curves in a plane.
5.	18/08 - 23/08	Sol. of linear O.D. eqns with constant coefficients, linear non-hom. diff. eqns.
6.	25/08 - 30/08	Linear diff. eqns. of 2nd degree with variable co-efficients, Method of
7.	1/09 - 6/09	Reduction of order, undetermined coefficients, Variation of parameter,
8.	8/09 - 13/09	Cauchy Euler's Eqn, Sol. of simultaneous diff. eqns, total differ. eqns.
9.	15/09 - 20/09	Genesis of P.D. Eqns, concept of linear and non-linear P.D. Eqns, complete sol.
10.	24/09 - 27/09	General sol., Singular sol. of a P.D. Eqn. Linear P.D.E. of 1st order. Lagrange's P.D.E. of the form $P(x, y, z) + Q(x, y, z)p + R(x, y, z)q = 0$
11.	29/09 - 04/10	Revision Test & Assign.
12.	6/10 - 11/10	Integral surfaces passing through a given curve
13.	13/10 - 18/10	Surfaces orthog. to a given system of surfaces. Compatible systems of first order eqns. Charpit's Method, Special types of 1st order P.D.Es. Jacobi's Method
14.	27/10 - 1/11	Second order P.D.Es. with constant coefficients, Revision Test
15.	3/11 - 8/11	
16.	10/11 - 24/11	