**MA4703 Ordinary Differential Equation**

Vector Fields, Graphical representation of solutions, Lipschitz functions, Integral inequalities, Uniqueness of solutions, Boundary value problems, Green’s functions, Distribution of zeros of solutions, Functional analytical preliminaries, Existence of solutions by Picard’s method, Existence by Perron’s method, Uniqueness and continuous dependence, Continuity and differentiability w.r.t., initial Conditions and parameters, Continuation of solutions, Linear equations, general theory, Solutions of linear equations with constant coefficients, Equations

with periodic coefficients, Floquet’s theory, Classification of stationary points and phaseportraits, Oscillation and boundedness of solutions, Lyapunov theory of stability, Poincare Bendixon theorem and applications.

**References:**

1. G. F. Simmons, Ordinary Differential Equations with Applications and Historical Notes. Tata McGraw Hill Edition, 2003.
2. G.F. Simmons and S.G. Krantz, Differential Equations Theory, Technique and Practice. (The Walter Rudin Student Series in Advanced Mathematics). Tata McGraw Hill Edition, 2006
3. E.A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall, Englewood Cliffs, N.J., 1961
4. E. A. Coddington and N. Levinson, Theory of Ordinary Differential Equations, Tata McGraw Hill, 1990
5. E. L. Ince, Ordinary Differential Equations, Dover Publications, 1958.