# MAM 2104 ORDINARY DIFFERENTIAL EQUATIONS

**UNIT – I** Existence and Uniqueness of solutions of differential equations , Oscillation Theory (Chapter 1 and Chapter 4)

**UNIT – II** Power series solutions and special functions, Second order linear equations, Gauss's Hyper Geometric Equation, Point at Infinity (Chapter 5,Section 27 – 31)

**UNIT – III** Legendre Polynomials, Bessel functions and their properties. Application of Legender polynomial to potential theory (Chapter 6 Sections 32-35, Appendix A)

**UNIT – IV** Systems of first order equations: linear and nonlinear systems (Chapter 7)

**UNIT – V** Nonlinear equations: Autonomous systems, phase plan, critical points and stability (Chapter 8, Sections 40-43)

## TEXT BOOK

George F Simmons – Differential Equations with applications and historical notes, Tata McGraw Hill, 1995