

SYLLABUS :-

MA 41005 Advanced Numerical Techniques (3-1-0 4) Prerequisite:
void Revision of IVP, single-step and multi-step methods. System of first order ODE, higher order IVPs. Numerical solutions of BVP - Linear BVP, finite difference methods, shooting methods, stability, error and convergence analysis, non linear BVP, higher order BVP. Classification of PDEs, Finite difference approximations to partial derivatives, convergence and stability analysis. Explicit and Implicit schemes - Crank-Nicolson scheme, tri-diagonal system, Laplace equation using standard five point formula and diagonal five point formula. ADI scheme, hyperbolic equation, explicit scheme, method of characteristics. Solution of one dimensional heat conduction equation by Schmidt and Crank Nicolson methods. Solution of wave equation.