

MT609: INTEGRAL EQUATION

Syllabus: Linear Integral Equations-Definition and classification, conversion of initial and boundary value problems to an integral equation; Eigen values and Eigen functions; solution of homogenous; Fredholm integral equations second kind with separable kernels; Solution of general Fredholm integral equation of second kind with separable kernels; Solution of volterra integral equations of second kind with convolution type kernels by Laplace transform Solution of singular integral equations by Fourier transform; Solution of Fredholm and Volterra integral equations of second kind by methods of successive substitutions and successive approximations; Resolvent kernels and its results; Conditions of uniform convergence and uniqueness of series solution; Integral equations with symmetric kernels - orthogonal system of functions; Fundamental properties of eigen values and eigen functions and bilinear form, Hilbert-schmidt theorem, solution of Fredholm integral equation of second kind by using Hilbert Schmidt theorem. Classical Fredholm theory - Fredholm theorems, solution of Fredholm integral equation of second kind by using Fredholm first theorem.

UNIT SCHEDULE

- Unit 8** Linear Integral Equations
- Unit 9** Solution of General Integral Equations with Special type of Kernels and by Integral Transform Method
- Unit 10** Solution of Integral Equation of Second Kind by Successive Approximation and Substitution
- Unit 11** Integral Equations with Symmetric Kernels
- Unit 12** Classical Fredholm Theory