SUBJECT NO-CH61015, SUBJECT NAME- ADVANCED MATHEMATICAL TECHNIQUES IN CHEMICAL ENGINEERING

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Prerequisite-Mathematics III and Mathematics IV or equivalentModels in chemical engineering; vector and tensor spaces; metric, norm and inner products; orthonormalization; matrices, operators and transformations; eigen values and eigen vectors; Fredholm alternative, Rayleigh quotient and its application to chemical engineering systems; self adjoint and non-self adjoint systems; partial differential equations and their applications in chemical engineering; Strum-Louiville theory; separation of variables and Fourier transformations; application of Greens function for solution of ODE and PDEs in chemical engineering; numerical techniques for solution of ODE and PDEs; linear stability and limit cycles; bifurcation theory; secondary bifurcation and chaos. Text Book:1.Mathematical methods in chemical engineering by S. PushpavanamReference Book :1.Mathematical methods in chemical engineering by A. Verma and M. Morbidelli2.Applied mathematics and modeling for chemical engineers by R. G. Rice and D. D. Do