

SYLLABUS

Maths-637S : LINEAR ALGEBRA

(COMPULSORY COURSE)

SEMESTER IV

P.U.

Total Marks : 100

Theory : 80 Marks

Internal Assessment : 20 Marks

Time : 3 Hrs.

Note :

1. The question paper will consist of 9 questions. Candidates will attempt total five questions.
2. Question No.1 is compulsory and will consist of short answer type questions covering the whole syllabus.
3. There will be four questions from each Unit and the candidates will be required to attempt two questions from each Unit.
4. All questions carry equal marks.

UNIT I

Definition and examples of vector spaces (over arbitrary fields), subspaces, direct sum of subspaces, linear dependence and independence, basis and dimensions, linear transformations, quotient spaces, algebra of linear transformations, linear functions, dual spaces, matrix representation of a linear transformation, rank and nullity of a linear transformation, invariant subspaces.

UNIT II

Characteristic polynomial and minimal polynomial of a linear transformation, eigenvalues and eigenvectors of a linear transformation, diagonalization and triangularization of a matrix, Jordan and Rational canonical forms, bilinear forms, symmetric bilinear forms, Sylvester's theorem, quadratic forms, Hermitian forms, Inner product spaces, Gram-schmidt orthonormalization process.