6. John B. Fraleigh, A First Course in Abstract Algebra, 7th Edition, 2002.

Code:MAT5103: Linear Algebra Prerequisites: **Basics in Matrix Theory:**	L	T	P	Credit
	4	1	0	4

Course Category	Core
Course Type	Theory
Course Objective	To provide a solid foundation in the mathematics of linear algebra. To develop problem solving skills To prepare the students for advanced level of Mathematics To discuss some of the applications of linear algebra

Course Outcome(s)	The students are: equipped with standard concepts and tools in linear algebra that they would find useful in their disciplines; made competent enough to pursue advanced level of Mathematics; enabled to use Linear Algebra techniques when it is required; get an insight into the enormous applicability of linear algebra. The competency developed include: Solving systems of linear equations; Qualitative analysis of systems of linear equations; Develop understanding of vector Spaces, linear independence , determinants, canonical forms , familiarize analysis of Transformations and use of eigen values and decomposition techniques.

Syllabus:

Vector Spaces: subspaces, bases and dimensions, co-ordinates, summary of row equivalence. Linear Transformations: Linear transformation, the algebra of linear transformation, Isomorphisms, representation of transformations by matrices.

Linear Transformations (contd) : Linear functionals, the double dual, the transpose of linear transformations.

Determinants: Commutative Rings, Determinant functions, Permutation and the uniqueness of determinants, Additional properties of determinants. Elementary Canonical Forms: Introduction, characteristic values, annihilating polynomials, invariant subspaces, simultaneous triangulation, simultaneous diagonalisation, direct sum decomposition, invariant direct sums, Jordan, Rational form and diagonalization.

Text books:

1. Kenneth Hoffman and Ray Kunze, Linear Algebra, 2nd Edition, Prentice Hall of India Private Ltd, New Delhi, 1971.

References:

1. Gilbert Strang, Introduction to Linear Algebra, Wellesley-Cambridge Press; 5th Edition, 2016. 2. Klaus Janich, Linear Algebra, Springer Verlag, 1994.
3. Paul R. Halmos, Linear Algebra Problem Book, The Mathematical Association of America, 1995.
4. Kumaresan, Linear Algebra: A Geometric Approach, Prentice Hall, 2000.

Code:MAT5104: Discrete Mathematics Prerequisites: Set theory and logic: Basic concepts, cardinal numbers	L	T	P	Credit
	4	1	0	4

Course Category	Core