

Teaching Plan 2019-20 (Even Semester)

(January 2020 to April 2020)

Subject: GE-II (Linear Algebra)

Semester-II

Department of mathematics, Ram Lal Anand College

Teacher: Mr. Dileep Kumar/Ms. Sweeti Yadav

Week	Course Content
07 Jan-10 Jan	Basic concept behind vectors in Euclidean space, Vector addition and scalar multiplication, Angle between vectors, Projection Vector, Cauchy-Schwarz inequality.
13 Jan-17 Jan	Gaussian elimination and back substitution, Gauss-Jordan row reduction form, Echelon form of a matrix, Determining the rank and row space of a matrix, Row and column space.
20 Jan-24 Jan	Characteristic polynomial, Eigen values and eigen vectors of a matrix, Concept of diagonalization of a matrix.
27 Jan-31 Jan	Introduction to vector spaces. Basic examples and properties of vector space. Definition and examples of subspaces.
03 Feb-07 Feb	Linear independence and dependence of vectors, Span of a set, Basis of a vector space, Maximal linearly independent sets with examples, Replacement theorem.
10 Feb-14 Feb	Equivalent systems, Solving system of linear equations using Gaussian elimination, Coordinate of a vector, Change of basis matrix.
17 Feb-21 Feb	Introduction to linear transformations, Matrix of a linear transformation, Related properties and examples.
24 Feb-28 Feb	Concept of one-one, onto linear transformations, Isomorphism, Linear operators and similarity.
02 Mar-06 Mar	Applications of Vector spaces and matrices in computer graphics, fundamental movements in a plane, composition of movements.
16 Mar-20 Mar	Kernel of a linear transformation, Range of a linear transformation, Rank-Nullity theorem and its corollaries, Related examples.
23 Mar-27 Mar	Isomorphic vector spaces, Algebra of linear transformations, Invertibility of a linear transformation.
30 Mar-3 April	Inner product in Euclidean space, Orthogonal basis and Gram-Schmidt process. Orthogonal complements and related examples.

6 April-10 April	Orthogonal projection onto a subspace, Projection theorem and related problems.
13 April-17 April	Least square method for finding the solution of inconsistent systems, Non-unique least square solutions.
20 April-28 April	Revision of syllabus.