**B.A. (ODL)** **Sem-IV** **CC-N1 – II**

# LINEAR ALGEBRA (MATHEMATICS)

**Unit-5: Matrices and System of Linear Equations**

5.1 Row echelon form of a matrix, reduced row echelon form of a matrix.

5.2 Definition of rank of a matrix using row echelon or row reduced echelon form.

5.3 System of linear equations- Introduction, matrix form of linear system, definition of row equivalent matrices.

5.4 Consistency of homogeneous and non-homogeneous system of linear equations using rank, condition for consistency.

5.5 Solution of System of Equations: Gauss elimination and Gauss-Jordan elimination method, examples.

**Unit-6: Vector Spaces-I**

6.1 Definition and Examples.

6.2 Subspaces.

6.3 Linear Dependence and Independence.

6.4 Basis of Vector Space

**Unit-7: Vector Spaces-II**

7.1 Dimension of a Vector Space.

7.2 Row, Column and Null Space of a matrix.

7.3 Rank and nullity.

**Unit-8: Linear Transformations**

8.1 Definition and Examples, Properties, Equality.

8.2 Kernel and range of a linear Transformation

8.3 Rank-Nullity theorem.

8.4 Composite and Inverse Transformation.

8.5 Matrices and Linear Transformation.

8.6 Basic Matrix Transformations in R2 and R3

8.7 Linear Isomorphism.