



Department of Mathematics
Faculty of Sciences, Jamia Millia Islamia

U. G. Minor Papers in Mathematics
(2024-25)
Course Structure and Syllabus

Semester	Code	Title of the Paper	Credit
III	24MATM201	Basic Linear Algebra	4

24MATM201 Basic Linear Algebra

Unit-I	Determinants, Properties of Determinates, Expansion of Determinants, Minors and Cofactors, Evaluation of Determinants, Classical adjoint, Cramer' rule, Solving Equations using Determinants, Area and Volume using Determinants
Unit-II	Matrices and their algebra, Types of matrices Identity, Singular and Non-singular matrices, Upper and Lower triangular Matrices, Diagonal Matrices, Transpose of a matrix, Adjoint and inverse of a matrix,
Unit-III	Hermitian and Skew Hermitian matrices, Row echelon and reduced row echelon form of a matrix, Rank of a matrix. Consistency of the system of homogeneous and non-homogeneous linear equations- with emphasis on problems. Gauss elimination method, Gauss Jordan Method.
Unit-IV	Eigenvalues and Eigenvectors of a matrix, Cayley Hamilton Theorem and its application to find out the inverse of a matrix. Similar matrices and diagonalization. Eigenvalues and eigenvectors of symmetric and Hermitian matrices

Books Recommended

1. David C. Lay: *Linear algebra and its applications (3rd Edition)*, Pearson Education asia, Indian Reprint, 2007.
2. V. Krishnamurthy, V. P. Mainra and J. L. Arora, *An Introduction to Linear Algebra*, Affiliated East- West Press Pvt. Ltd., New Delhi.
3. Seymour Lipschutz and Marc Lars Lipson, *Linear Algebra*, Schaum's Outlines Series, McGraw-Hill.