

## LESSON PLAN

CLASS: B.Sc.B.A. 1<sup>st</sup> sem

SUBJECT: Algebra (Mathematics)

| Week | Topics                                                                                                                                                            |
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| 1    | Definition and types of matrices-types with examples, Rank of a matrices. Inverse of a matrix. Linear dependence and independence of rows and columns of matrices |
| 2    | Row rank and column rank of a matrix. Rank of a matrices. Inverse of a matrix<br>Eigenvalues, eigenvectors and the characteristic equation of a matrix.           |
| 3    | Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix.                                                           |
| 4    | Applications of matrices to a system of linear (both homogeneous and non-homogeneous) equations.                                                                  |
| 5    | Theorems on consistency of a system of linear equations.                                                                                                          |
| 6    | Unitary and Orthogonal Matrices, Bilinear and Quadratic forms.                                                                                                    |
| 7    | Relations between the roots and coefficients of general polynomial equation in one variable.                                                                      |
| 8    | Solutions of polynomial equations having conditions on roots.                                                                                                     |
| 9    | Common roots and multiple roots.<br>Transformation of equations.                                                                                                  |
| 10   | Nature of the roots of an equation Descarte's rule of signs.                                                                                                      |
| 11   | Solutions of cubic equations (Cardon's method).                                                                                                                   |
| 12   | Biquadratic equations and their solutions.                                                                                                                        |