Linear Algebra

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
MAT	**1227**	**Linear Algebra**	**4**	**3**	**0**	**2**	**MAT 1113**

Syllabus:

Matrices and Systems of Linear Equations: Linear Systems and Matrices, Gauss Eliminations, Echelon & Reduced Echelon Forms, Matrix Operations, Matrix Inverse, Gauss Jordan Elimination for finding the inverse of a matrix.

Determinants: Determinants and their properties, Minors and Cofactors, Evaluating Determinants, Cramer's Rule, Cofactor Expansion, The Adjoint Method for Finding A^{-1}.

Vector Spaces: Vector Spaces, Subspaces, Spanning Sets, Linear Independence, Basis and Dimension of a Vector Space, Rank of a Matrix, Orthogonal Set of Vectors and Gram-Schmidt Process.

Linear Transformations: Linear Transformation, The Kernel and the Image, Matrix Representation of a Linear Transformation, Nonsingular Transformations and their Inverses, Applications.

Eigenvalues and Eigenvectors: Characteristic Polynomial, Eigenvalues, Eigenvectors, Diagonalization of Matrices, Applications.

References:

1. ***Linear Algebra with Application,*** *Gareth Williams,* 9th Edition, Jones and Bartlett, 2017.
2. ***Linear Algebra with Application***, W. K. Nicholson, 7th Edition, McGraw- Hill, 2013.
3. ***Linear Algebra with Application***, O. Bretscher; 5th Edition, Pearson Ed. Int., 2012.