| Module Code | MA2032 | Title | Linear Algebra | | | |
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| Credits | 02 | Hours/ Week | Lectures | 02 | Pre-requisites | MA 1012 |
| | | | Lab/Tutorials | – | | |

**Learning Objectives**

The aim of the course is to familiarize students with the concept of a vector space and its algebraic properties and the manipulative techniques necessary to use matrices and determinants in solving applied problems. This course in linear algebra serves as a bridge from the typical intuitive treatment of calculus to more rigorous courses. Computer projects using the software Mathematica are designed to reinforce concepts of matrix multiplication, inverse eigenvalues and eigenvectors

**Learning Outcomes**

- Reduce a matrix using Gauss-Jordan reduction
- Solve a system of n equations and m variables
- Find the inverse of a matrix
- Understand the dimension of a vector space, rank of a matrix and basis for a vector space.
- Understand the concept of linear independence, linear transformation and determinants
- Find eigenvalues and eigenvectors, and diagonalize quadratic forms.

**Outline Syllabus**

Vectors spaces, subspaces, linear combinations, spanning sets, linear independence, and bases. Column space and row space and null space of a matrix and application. Linear transformation. Eigen values, eigen vectors and related topics. Diagonalisation of matrices. Quadratic forms. Applications. Numerical Linear Algebra.