

MT104-LINEAR ALGEBRA

Credit Hours: 3

Semester : Spring 2018

Prerequisite: None

Objective:

The objective is to impart training to the students in this very important branch of Mathematics. Students are expected to learn about system of linear equations, vector spaces, inner products, eigenvalues and linear transformations. Attempt will be made to introduce students to postulational and axiomatic approach in mathematics.

This course also emphasizes the application of linear algebra in science and real life.

Recommended Book:

Elementary Linear Algebra Application Version by Howard Anton & Chris Rorres (10th Edition)

Reference Book: Linear Algebra with Applications By Bernard Kolman

Outlines:

Matrices & System of Linear Equations (5 Lectures)

Matrices, determinants, inverses, invertible, diagonal, triangular, and symmetric matrices, system of linear equations, Gaussian elimination, results on system of equations.

General Vector Spaces (7 Lectures)

Real Vector Spaces, Subspaces, Linear Independence, Basis and Dimensions. Row Space, Column Space and Null Space, Rank and Nullity.

MID-I

Inner Product Spaces (4 Lectures)

Inner Products, Angles and Orthogonality in Inner Product Spaces, Orthogonal Bases: Gram Schmidt Process, QR-decomposition, Best Approximation, Least Squares, Orthogonal Matrices, Change of Basis.

MID-II

Eigenvalues, Eigenvectors (4 Lectures)

Eigen values and Eigen vectors Diagonalization, Orthogonal Diagonalization

Linear Transformations (5 Lectures)

General Linear Transformation, Kernel and Range, Inverse Linear Transformation, Similarity

Application of Linear Algebra (2 Lectures)

Marks Distribution:

Exams	Marks
Final	50
Sessional-I	15
Sessional-II	15
Quizzes	5*2=10
Assignment	5*2=10
Total	100