Gujarat University

NEP 2020 Based Syllabus

Syllabus for B. Sc. Sem-IV Mathematics Minor

Effective from June-2024

Syllabus for B Sc Semester - IV

Mathematics Minor

Course-MDC-C-MAT-244T

Paper Title: Basics on Determinant and Matrices

UNIT I Determinants:

Determinants: Determinants and their properties, value of determinant, Basic results, Laplace expansion, Cramer's rule.

UNIT II Matrices : Eigen Values-Eigen Vectors and Caley Hamilton's Theorem

Eigenvalues and Eigenvectors of linear operators and of symmetric linear maps Eigenvalues and Eigenvectors of square matrices and of real and symmetric matrices. Cayley –Hamilton's theorem: Only Statement and Examples on verification of Caley-Hamilton's Theorem and using it to find inverse of nonsingular square matrices.

Reference books

1) An Introduction to Linear Algebra- V. Krishnamurthy, V P Mainra, J L Arora, East-West press Pvt Ltd., New Delhi)
2) Linear Algebraa Geometric Approach – S.Kumaresan , PHI

Syllabus for B Sc Semester – IV

(MATHEMATICS PRACTICAL)- Maths Minor

Course-DSC-C-MAT-244P

Maths Practical (Based on MAT-243T)

Practicals

1) Examples of finding value of determinant through the properties.
2) Examples of finding value of determinant of triangular and diagonal matrices.
3) Laplace Expansion: Examples of expanding determinant about a row.
4) Laplace Expansion: Examples of expanding determinant about a column.
5) Examples of a determining singularity or non-singularity of a square matrices by value of it's determinant.
6) Examples of solving system of linear equations through Cramer's Rule.
7) Examples of finding eigen Values and eigen vectors of square matrices.
8) Examples of finding eigen Values and eigen vectors of real and symmetric square matrices.
9) Examples of symmetric and Triangular matrices.
10) Examples of the verification of Caley-Hamilton Theorem.
11) Examples of determining non-singularity of matrix by Caley-Hamilton Theorem.
12) Examples of matrix inversion by using Caley-Hamilton's Theorem.