

MA 101.Mathematics I (3-1-0-8)

Systems of linear equations and their solutions; vector space R^n and its subspaces; spanning set and linear independence; matrices, inverse and determinant; range space and rank, null space and nullity, eigenvalues and eigenvectors; diagonalization of matrices; similarity; inner product, Gram-Schmidt process; vector spaces (over the field of real and complex numbers), linear transformations. Convergence of sequences and series of real numbers; continuity of functions; differentiability, Rolle's theorem, mean value theorem, Taylor's theorem; power series; Riemann integration, fundamental theorem of calculus, improper integrals; application to length, area, volume and surface area of revolution.

Textbooks:

- [1] D. Poole, Linear Algebra: A Modern Introduction, 2nd Edn., Brooks/Cole, 2005.
- [2] G. B. Thomas, Jr. and R. L. Finney, Calculus and Analytic Geometry, 9th Edn., Pearson Education India, 1996..

References:

- [1] G. Strang, Linear Algebra and Its Applications, 4th Edn. Brooks/Cole India, 2006.
- [2] K. Hoffman and R. Kunze, Linear Algebra, 2nd Edn., Prentice Hall India, 2004
- [3] R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 3rd Edn., Wiley India, 2005
- [4] S. R. Ghorpade and B. V. Limaye, An Introduction to Calculus and Real Analysis, Springer India, 2006.