



BASIC LINEAR ALGEBRA

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IIT Bombay

INTENDED AUDIENCE : B.Tech, B.Sc., M.Sc (maths) , BA/MA Economics/Statistics

PREREQUISITES : Core

INDUSTRY SUPPORT : Basic mathematics at school level undergraduate level

COURSE OUTLINE :

Linear Algebra is a basic course for students intended to go for Engineering studies and higher studies in Mathematics. We will cover the basic tools needed in these branches.

ABOUT INSTRUCTOR :

Prof. I. K. Rana Emeritus Fellow at Department of Mathematics, IIT Bombay. I have taught courses at B.Tech, M.Sc., and Ph.D level for the last 34 years.

COURSE PLAN :

Week 1: Matrices and Matrix operations, REF

Week 2: Linear systems, Gauss Elimination and Inverse of a matrix

Week 3: \mathbb{R}^n ; subspaces, linear independence, rank of a matrix

Week 4: Determinants, rank, invertibility

Week 5: Linear transformations, rank-nullity

Week 6: Inner product spaces, Gram-Schmidt process

Week 7: Eigenvalues and Eigenvectors

Week 8: Similarity, diagonalization and applications