BASIC LINEAR ALGEBRA

MATHEMATICS

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IIT Bombay

TYPE OF COURSE : New | Core | UG
INTENDED AUDIENCE : B.Tech, B.Sc., M.Sc (maths), BA/MA Economics/Statistics
PRE-REQUISITES : Basic mathematics at school level

COURSE OUTLINE :

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

ABOUT INSTRUCTOR :

After working as a Professor at IIT Bombay from 1984-2015, he rejoined as Emeritus Fellow at IITB. He is president of AMTI (The Association of Mathematics Teachers of India) and has supervised three Ph.D. students and authored 4 books:
1) "Introduction to measure and Integration" AMS Graduate Studies in Mathematics Volume 45, 2000."
2) From Numbers to Analysis" World Scientific Press, 1998"
3) Calculus @IITB, Concepts and Examples", math4all, India, 2007
4) "From Geometry to Algebra: A course in Linear Algebra" Ane Books, India, 2007

COURSE PLAN :

Week 01 : Matrices and Matrix operations, REF
Week 02 : Linear systems, Gauss Elimination and Inverse of a matrix
Week 03 : R^n; subspaces, linear independence, rank of a matrix
Week 04 : Determinants, rank, inveribility
Week 05 : Linear transformations, rank-nullity
Week 06 : Inner product spaces, Gram-Schmidt process
Week 07 : Eigenvalues and Eigenvectors
Week 08 : Similarity, diagonalization and applications