

## **Information regarding MA2031 (Linear Algebra for Engineers) in July-Nov 2018 semester**

Slot A, Class hours: Monday 8:00-8:50, Thursday 11:00-11:50, Friday 10:00-10:50.

The course will run in two batches with details as given below:

Batch 1: All students taking this course from the branches : AE, BE, BS, CE, CH, CS, ED  
Room No. CRC 304  
Teacher: Arindama Singh

Batch 2: All students taking this course from the branches: EE, EP, ME, MM, NA, PH  
Room No. CRC 305  
Teacher: Suhas J Pandit

Syllabus: Vector spaces: Real and Complex Vector Spaces, Subspaces, Span, Linear Independence, Dimension. Linear Transformations: Linear Transformations, Rank and Nullity, Matrix Representation, Change of Bases, Solvability of linear systems. Inner Product Spaces: Inner products, angle, Orthogonal and orthonormal sets, Gram-Schmidt orthogonalization, Orthogonal and orthonormal Basis, Orthogonal complement, QR-factorization, Best approximation and least squares, Riesz representation and adjoint. Eigen Pairs of Linear Transformations: Eigenvalues and eigenvectors, spectral mapping theorem, characteristic polynomial, Cayley-Hamilton Theorem. Matrix Representations: Block-diagonalization, Schur triangularization, Diagonalization Theorem, Generalized eigenvectors, Jordan form, Singular value decomposition, Polar decomposition.

Texts:

1. S. Lang, Linear Algebra, 3rd edition, Springer, 2004
2. D. W. Lewis, Matrix Theory, World Scientific, 1991.

References:

- 1 K. Janich, Linear Algebra, Springer, 1994.
2. B. Koleman and D. Hill, Elementary Linear Algebra, Pearson; 9th edition, 2007.
3. H. Anton, C. Rorres, Elementary Linear Algebra: Applications, Wiley; 11th edition, 2013

However, classnotes in the form of a book will be provided on moodle. It is:

“e-Book”: Introduction to Linear Algebra – Arindama Singh

We will follow this as our text.

Occasionally, we will refer the book

Introduction to Matrix Theory by Arindama Singh, Ane Books, 2018.

Assignments: The exercises from the “e-Book”.

Examinations:

As per slot A;

Quiz-1 and Quiz-2 each for 20 marks;

End semester examination for 60 marks.

There will be no special tutorial sessions. Doubts are to be discussed in the class.