



BHARATIYA VIDYA BHAVAN'S
SARDAR PATEL INSTITUTE OF TECHNOLOGY
MUNSHI NAGAR, ANDHERI (WEST), MUMBAI – 400 058.
(Autonomous Institute Affiliated to University of Mumbai)
CSE - MCA Department

Academic Year: 2025-26

Semester: I

Class: FYMCA

Course Code: MC501

Course Name: Linear Algebra

Innovative Teaching Learning Adopted

Following teaching-learning methods have been adopted to teach Linear Algebra course..

1) Peer Learning:

Students are divided into small groups and assigned topics such as **Vector Spaces, Linear Transformations, Eigenvalues and Eigenvectors, Diagonalization, and Inner Product Spaces**. Each group studies the assigned concept, prepares a presentation using suitable examples and applications, and explains it to the entire class. Students also work collaboratively on numerical and conceptual problems.

Link: <https://ajitbkp.github.io/LinAlg-SageBook/frontmatter.html>

Outcome: Collaborative learning, improved conceptual understanding, mathematical communication, and demonstration of problem-solving skills.

2) Technology-Enabled Mathematical Visualization:

Interactive mathematical tools and computer-based demonstrations are used to visualize concepts such as **vector spaces, linear transformations, eigenvectors, planes, and matrix transformations**. Students observe the effect of transformations and relate graphical representations to their algebraic formulations.

Outcome: Improved visualization skills, deeper conceptual understanding, and better interpretation of abstract Linear Algebra concepts.

3) Video Lecture and Flipped Classroom:

For Linear Algebra, short video lectures are provided on important concepts such as **Matrices, Rank, Linear Independence, Eigenvalues and Eigenvectors**. Students watch the videos before the classroom session. During the class, conceptual questions, numerical problems, and application-based problems are discussed to assess their understanding.

Video: https://www.youtube.com/watch?v=1XlT3Y2oyAU&list=PLU6SqDYcYsfI7Ebw_j-Vy8YKHdbHKP9am

Outcome: Better understanding of fundamental concepts, active classroom participation, and development of problem-solving skills.