Semester	JAN 2023
Open to semester	2
Course code	**MT1223**
Course title	**Linear Algebra**
Credits	3 /
Course Coordinator & participating faculty (if any)	Rabeya Basu,Ayan Mahalanobis
Nature of Course	Lectures and Tutorials
Pre-requisites	None
Objectives (goals, type of students for whom useful, outcome etc)	The notion of a vector space generalizes our familiar experience of three dimensional space, with its planes and lines, to any dimension. However in higher dimensions our geometric intuition should be supported with the mathematical theory of coordinates. In this course the main objects of study are finite dimensional space over real numbers, its subspaces, and linear transformations. Our tools are the algebra of matrices and vectors. By introducing the notion of an “inner product”, we may also speak of angles and magnitude in any dimension. The importance of linear algebra to mathematics cannot be overstated. Along with calculus, linear algebra is one of the two pillars of mathematics, and is fundamental to any student of science.
Course contents (details of topics /sections with no. of lectures for each)	Vector Space structure on R^n, Matrix operations and systems of linear equations, Gauss-Jordan Elimination, Matrix Inversion, Determinants, Abstract Vector Spaces with Examples, Subspaces, Linear Combinations, Basis and Dimension, Linear Transformations and Geometry, Ranknullity Theorem, Coordinates and Change of Basis, dot product on R^n, Orthogonality and Gram-Schmidt Process, Eigenvalues and Eigenvectors, Diagonalizability, Applications to linear ODE, discrete dynamical systems, least squares method
Evaluation /assessment	End-Sem Examination-50% Mid-Sem Examination-50% Others-0%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Introduction to Linear Algebra: G. Strang (2009) Wellesley Cambridge Press. 2. Linear Algebra with applications: Bretscher (2012) Pearson

	3.Linear Algebra: K. Hoffman and R. Kunze (2009) Prentice Hall