Semester	AUG 2022
Open to semester	3
Course code	**MT2123**
Course title	**Advanced Linear Algebra (E)**
Credits	3 /
Course Coordinator & participating faculty (if any)	Anisa Chorwadwala
Nature of Course	Lectures and Tutorials
Pre-requisites	Linear Algebra
Objectives (goals, type of students for whom useful, outcome etc)	In this course, we study the abstract vector spaces over arbitrary fields, diagonalization and canonical forms for linear maps. We explore the close connection between Linear algebra and geometry of Euclidean spaces Rn and Cn via inner products and quadratic forms.
Course contents (details of topics /sections with no. of lectures for each)	Theory of abstract vector spaces over a field, Basis and dimension, Linear maps, Adjoints of linear transformations and dual spaces, quadratic forms and symmetric matrices, orthogonal and unitary matrices, diagonalization of hermitian and symmetric matrices, eigenvectors and eigenvalues, Cayley-Hamilton theorem, Minimal polynomial, exponentiation of matrices, trace, determinant, Introduction of classical linear groups, Multilinear algebra: Tensor product of two vector spaces and, decomposition of V ? V into symmetric and alternating tensors
Evaluation /assessment	End-Sem Examination-35% Mid-Sem Examination-35% Others-30%
Suggested readings (with full list of authors, publisher, year, edn etc.)	(1)Linear Algebra: K. Hoffman and R. Kunze (2009) Prentice Hall (2) Finite Dimensional Vector Spaces: P. Halmos. (2012) Martino Fine

	Books (3) Linear Algebra done right: S. Axler (2014) Springer (4) Algebra: M. Artin (1991) Prentice Hall (5) Linear Algebra: Stephen Friedberg, Arnold Insel (2004)