Semester	AUG 2022
Open to semester	7,11,13
Course code	**MT4124**
Course title	**Functional Analysis**
Credits	4 /
Course Coordinator & participating faculty (if any)	Haripada Sau
Nature of Course	Lectures
Pre-requisites	Measure Theory and Integration
Objectives (goals, type of students for whom useful, outcome etc)	Broadly speaking, this is a study of infinite dimensional Linear Algebra; infinite-dimensional vector spaces and linear transformations between them are at the core of the study.
Course contents (details of topics /sections with no. of lectures for each)	Normed linear spaces: Definition and examples, bounded linear operators, Hahn-Banach theorem, Banach spaces, Hilbert spaces: Definition and examples, geometry of Hilbert spaces, orthonormal sets, orthogonal projections, Riesz representation theorem, Spectral theory: Adjoint of an operator, unitary operators, normal operators, compact operators, spectrum of compact operators, spectral theorem for compact self-adjoint operators. L^p spaces, Arzela-Ascoli theorem, uniform boundedness principle, open mapping theorem, closed graph theorem, quotient spaces, projections, dual spaces, weak and weak* convergence, reflexivity
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-60% Others-%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Functional Analysis: B. V. Limaye (1996) New Age International Publishers 2. A Course in Functional Analysis, John B. Conway, Springer 3. Real and Complex Analysis: W. Rudin (2006) McGraw Hill 4. Notes on Functional Analysis: R. Bhatia (2009) Hindustan Book Agency