1.	Title of the course	Functional Analysis
2.	Course number	MA608L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To MA6022/7
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	**Course Objective(s):** To describe properties of normed linear spaces, Banach Spaces, Inner Product Space and Hilbert Space and construct examples of such spaces. To study fundamental theorems on Banach spaces and Hilbert spaces. To know three important classes of operators (self-adjoint, unitary and normal operator) which have a key role in applications To know Spectral theory and understand spectral properties of bounded self adjoint operators.	
10.	**Course Content:** Normed linear space; Banach spaces and basic properties, Bounded linear maps on a normed linear spaces and operator norm, Hahn-Banach theorem, Uniform Boundedness Theorem, Open Mapping Theorem, Closed Graph Theorem and Banach Fixed Point Theorem. Dual spaces and adjoint of an operator. Inner product spaces and Hilbert spaces, orthonormal set, Gram Schmidt orthonormalization, Bessels inequality, Orthonormal basis, Separable Hilbert spaces. Projection and Riesz representation theorem, Bounded operators on Hilbert spaces:Adjoint, normal, unitary, self adjoint operators, compact operators. Spectral theorem for compact self adjoint operators.	
11.	**Textbook(s):** 1. Limaye B V, *Functional Analysis*, New Age International Publishers (1996).	
12.	**Reference(s):** 1. Kreyszig E, *Introductory Functional Analysis with Applications*, Wiley (1989). 2. Larsen R, *Functional analysis: an introduction*, M. Dekker (1973). 3. Rudin W, *Functional Analysis*, Mc Graw Hill Education (India) Private Ltd. (2006).	