

Subject Code: 1SC2040202	Subject Title: FUNCTIONAL ANALYSIS-I
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Course Objective:

- The purpose of the course is to give knowledge of Inner product spaces, prepare students to graduate-level courses in functional analysis theory, and to demonstrate applications of Normal, unitary and self-adjoint operators.

Teaching scheme (hours) per week		Credit			Theory Marks		Practical Marks		Total
Lecture	Tutorial	Theory	Practical	Total	Uni. Assessment	Cont. Assessment	Uni. Assessment	Cont. Assessment	
4	1	5	-	5	60	40	--	--	100

Subject Contents			
Unit. No	Topic	Total Hours	Weight (%)
1	Inner product spaces, orthonormal sets. Hilbert spaces.	18	25
2	Approximation and optimization. Projections and Riesz representation theorems.	18	25
3	Bounded operators and adjoints. Normal, unitary and self-adjoint operators.	18	25
4	Spectrum and Numerical Range. Compact self-adjoint operators.	18	25

Course Outcome:

- Upon completion of the course, students will have a working knowledge of the fundamental definitions and theorems of Inner product spaces, orthonormal sets. Hilbert spaces and also student will be able to work with Spectrum and Numerical Range. Compact self-adjoint operators.

List of References:

- Limaye, B.V., Functional Analysis, New Age International Publ. Ltd., New Delhi, 1996.
- H.L.Royden, Real Analysis (3rd Edition) Mc. Millan, 1998.