

Subject Code: 1SC2040307	Subject Title: FUNCTIONAL ANALYSIS-II
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Course Objective:

- The purpose of the course is to give knowledge of Normed linear spaces, Hahn-Banach Theorems, Spectrum of a bounded linear transformation and its parts, Bolzano-Weiestrass Property described in detail in the syllabus.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Tutorial	Theory	Tutorial	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	1	4	1	60	40	-	-	100

Subject Contents			
Unit. No	Topic	Total Hours	Weight (%)
1	Normed linear spaces (examples and basic properties), Holder-Minkowski Inequalities; Bounded linear transformations. Space of bounded linear transformations.	18	25
2	Hahn-Banach Theorems (separation and extension), strict convexity and uniqueness of Hahn-Banach extension, Banach spaces, Uniform boundedness principle (consequences and examples), Convergence of Quadrature formulae.	18	25
3	Closed graph Theorem. Projections. Open mapping Theorem, bounded inverse theorem. Spectrum of a bounded linear transformation and its parts. Spectrum of a finite rank operator.	18	25
4	Duals and transposes, duals of and $C([a, b])$, weak and weak* convergence, Bolzano-Weiestrass Property. Reflexivity, Uniform Convexity and Milman Theorem.	18	25

Course Outcome:

- On successful completion of the course, students should be able to
- Students will have a working knowledge of the fundamental definitions and theorems of Normed linear spaces, Open mapping Theorem. Banach spaces and also student will be able to work with Hahn-Banach Theorems (separation and extension). Uniform Convexity and Milman Theorem.

List of References:

- B. V. Limaye, Functional Analysis, New Age International (P) Ltd., 2001.
- V. K. Krishnan, Text book of Functional Analysis; A problem oriented approach, Prentice Hall of India, 2001.
- Thamban Nair, Functional Analysis-a first course, Printice Hall of India, 2002.
- S. Ponnusamy, Foundations of Functional Analysis, Narosa Pub. House, 2004.