Semester IV

Subject Name: Functional Analysis	**Duration: 6 hrs /Cycle**
Subject Code: 4PGM2(2015 on)	**Credit : 4**

Unit I: Preliminaries: Relations on a Set - Linear Spaces and Linear Maps - Metric Spaces and continuous functions.

Unit II: Fundamentals of Normed Spaces: Normed Spaces - Continuity of Linear Maps - Hahn-Banach Theorems - Banach Spaces.

Unit III: Bounded linear Maps on Banach Spaces: Uniform Boundedness Principle - Closed Graph and Open Mapping Theorems - Bounded Inverse Theorem.

Unit IV: Geometry of Hilbert Spaces: Inner Product Spaces - Orthonormal Sets.

Unit V: Bounded Operators on Hilbert Spaces: Bounded Operators and Adjoints - Normal, Unitary and Self-Adjoint Operators.

Text Book: Functional Analysis – Balmohan V. Limaye – Revised 2nd Edition 2008, New Age International Publishers.

Chapter: 1(Sec.1-3), 2(Sec. 5 – 8), 3(Sec. 9-11), 4(Sec. 21 & 22), 5(Sec. 25 & 26)**.**

Reference Books: 1. Introduction to topology and modern analysis by G. F. Simons, Tata McGraw – Hill International Edition (2004).

2. Functional analysis by K. Chandrasekhara Rao Second Edition 2006, Narosa Publishing House.