15 MMCC – 301 FUNCTIONAL ANALYSES (3-1-0)

MODULE-I (14 Hours)

Normed spaces, continuity of linear maps, Hahn-Banach theorems, Banach spaces.

Uniform bounded principle, Application-Divergencce of Fourier Series of Continuous Functions, closed graph theorem, open mapping theorem, bounded inverse theorem, Spectrum bounded Operator.

MODULE-II (13 Hours)

Duals and transposes, duals of $L^p[a,b]$ and $C[a,b]$.

Inner product spaces, orthonormal sets, approximation and optimization, projections, Riesz representation theorem.

MODULE-III (13 Hours)

Bounded operators and adjoints on a Hilbert space, normal, unitary and self adjoint operators.

Text book :

1. B. V. Limaye : Functional Analysis (2nd Edition)- New Age International Limited.

Chapter-2 (5-8), chapter-3 (9-12), chapter-4 (13,14), chapter-6 (21-24), chapter-7 (25,26)

2. G. *BACHMAN*, L. *NARICI*, *Functional Analysis*, Academic Press

Reference book :

1) Erwin Kreyszig, Introductory Functional Analysis with Applications, John Wiley and Sons (Asia), pvt.ltd., 2006.
2) John B. Conway, A course in Functional Analysis, 2nd edition, Springer verlag, 2006