M.A/M.Sc Mathematics Semester 4th

Effective from academic session 2011 ⟹ **Repetition for 2012 with minor change**

BANACH ALGEBRAS AND SPECTRAL THEORY

Course No. MM-OP-409

Unit-I

Banach Algebra:- Preliminaries on Banach Algebra's Invertible elements, the spectrum, spectral radius and the spectral radius formula, Gelfand- Mazur theorem, Gelfand mapping, maximal ideal space and its characterization, continuity of multiplicative functionals on a Banach algebra.

Unit-II

B* -Algebra and the Gelfand Naimark Theorem, Ideals in C(X) and application to stone-Cech conpactification and Banach stone theorem, structure of commutative C* - Algebras.

Unit-III

Compact operators in Banach spaces, spectral theorem for compact Hermitian operators, spectral theorem for compact normal operators and its consequences.

UNIT-IV

Invariant subspace problem and its validity for compact Hermitian operators, Lomonosov's theorem on the existence of invariant subspaces for operators commuting with compact operators.

Recommended Books

1.J.B. Conway, A course in Functional Analysis (GTM 96, Springer Verlag**).**

2.K.Saxe, Beginning Functional Analysis, Springer Verlag.

3 E. Hewitt & K.A Ross, Abstract Harmonic Analysis-I.

4.G.B.Folland, Real Analysis.