M.A/M.Sc Mathematics Semester 3rd

Effective from academic session 2011 $\longrightarrow$ **Repetition for 2012 with minor change**
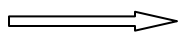
ADVANCED TOPICS IN TOPOLOGY AND MODERN ANALYSIS

Course No. MM-OP-303

Unit I
Uniform spaces. Definition and examples, uniform topology, and metrizability complete regularity of uniform spaces, pre-compactness and compactness in uniform spaces, uniform continuity.

Unit II
Uniform continuity, uniform continuous maps on compact spaces Cauchy convergence and completeness in uniform spaces, initial uniformity, simple applications to function spaces, Arzela- Ascoli theorem**.**

Unit III
Abstract Harmonic Analysis, Definition of a topological group and its basic properties. Subgroups and quotient groups. Product groups and projective limits. Properties of topological groups involving connectedness. Invariant metrics and Kakutani theorem, Structure theory for compact and locally compact Abelian groups.

Unit IV
Some special theory for compact and locally compact Abelian groups, Haar integral and Haar measure, invariant means defined for all bounded functions, convolution of functions and measures. Elements of representation theoy, Unitary representations of locally compact groups.

Recommended Books:

1. I.M. James Uniform Spaces, Springer Verlag.

2. K.D. Joshi, Introduction to General Topology.

3. S.K.Berberian, Lectures on Operator Theory and Functional Analysis,   Springer Verlag.

4. G.B. Folland, Real Analysis, John Wiley.

Suggested Readings:

1. G. Murdeshwar, General Topology,

2. E. Hewitt & K.A Ross, Abstract harmonic Analysis-I, Springer Verlag.