

Course Name: TOPOLOGY

Course Code: MAT 506

Credit: 4

SYLLABUS

Topological Spaces and Continuous Functions: Basics, Topological Spaces, Basis for a Topology, The Order Topology, The Product Topology on $X \times Y$, The Subspace Topology, Closed Sets and Limit Points, Continuous Functions, The Product Topology, The Metric Topology, The Quotient Topology.

Connectedness and Compactness: Connected Spaces, Connected Sets in the Real Line. Components and Path Components, Local Connectedness, Compact Spaces, Compact set in the Real line, Limit Point Compactness, Local Compactness.

Countability Axioms, Separation Axioms.

The Urysohn Lemma and Tietze Extension Theorem, Baire Category Theorem, The Urysohn Metrization Theorem, Partitions of Unity, Tychonoff Theorem for Product Spaces

Reference Books:

1. K.D. Joshi (2017), *Introduction to General Topology*, New age International (P) Limited.
2. J. L. Kelly (2017), *General Topology*, Dover Publications Inc., 2017.
3. J. R. Munkres (1976), *Topology – A First Course*, Prentice Hall of India.
4. G.F. Simmons (2017), *Introduction to Topology and Modern Analysis*, Mc. Graw Hill Education.
5. <https://archive.nptel.ac.in/courses/111/106/111106054/>