Syllabus

- Topology and topological space
  - open sets and closed sets
  - closure of a set
  - interior, exterior and boundary
  - neighborhoods and neighborhoods systems
  - weak and strong topology
  - topology of the real line and plane
  - cofinite and cocountable topology
  - subspaces
  - relative topology
  - bases and subbases for a topology
  - continuity and topological equivalence
  - homeomorphic spaces
- Metric and normed spaces
  - Metric topologies
  - properties of metric spaces
  - metrizable space
  - Hilbert space
  - convergence and continuity in metric space
  - normed spaces
- Countability
  - First countable spaces
  - second countable spaces and related theorems
- Compactness
  - Covers
  - compact sets
  - subset of a compact space
  - finite intersection property
  - Bolzano-Weierstrass theorem
  - locally compact spaces
- Connectedness
  - Separated sets
  - connected sets
  - connected spaces

  - components
  - locally connected spaces and simply connected spaces

- Separation axioms
  - T1-spaces
  - Hausdorff spaces
  - regular spaces
  - normal spaces
  - completely normal spaces and completely regular spaces

Books Recommended:

- Simmons, G.F.: Introduction to Topology and Modern Analysis
- Gal, S.: Point Set Topology
- Lipschutz, S.: General Topology
- Kelley, J.L.: General Topology
- Hockling and Young: Topology