Syllabus for Topology Preliminary Exam
(Based on MATH 631, Topology)

Topological Spaces and Continuous functions.   Topological spaces, open sets, closed sets, basis, sub-basis, subspaces, product topology, limit points, sequences, convergence, continuous functions, homeomorphisms, metric spaces. Examples including: euclidean spaces and subspaces, ordered spaces, ordinal spaces, Sorgenfrey line. [M, Ch. 2, Sections 12-21].

Connectedness and Compactness: Definitions and properties of continuous images, subsets of R and R^n with these properties, sequential and limit point compactness, equivalence of compactness notions for metric spaces, counterexamples in abstract spaces, local compactness, compactifications, Stone Cech compactification of a countable discrete space, compactness of arbitrary products of compact spaces. [M, Ch. 3, Sections 23, 24, 26-29, Chapter 5, 37,38].

Countability and separation axioms: First and second countability, Hausdorff spaces, regular spaces, completely regular spaces, normal spaces, Urysohn's Lemma, Tietze Extension Theorem. [M, Ch. 4, Sections 30-35].

[M] Munkres, Topology, Second Edition, Prentice Hall 2000 (ISBN 0-13-181629-2)