Geometry/Topology Qualifying Exam

Syllabus

This exam covers the material of a standard first year course in Geometry and Topology that include:
- point set topology and introductory algebraic topology (covering spaces), and
- differentiable manifolds.

Below is the material from these courses and suggested texts that are relevant for the preparation for this exam.

(1) Point set topology / Algebraic topology:

Suggested texts:


Suggested course: MTG 4302 Topology. Students who are already familiar with the material from point set topology described below may prepare for this exam by taking MTG 5326 to cover the material from algebraic topology.

Topics included in Qualifying Exam
(from point set topology/introductory algebraic topology):

1. Basic set theory: Relations, equivalent relations, equivalence classes, order relations. Countable and uncountable sets.


5. Topology and metric spaces: Complete metric spaces, compactness in metric spaces, Ascoli’s theorem.

(2) Differential Geometry

**Suggested text:**


**Suggested course:** MTG5256

**Topics included in Qualifying Exam:**


2. Tensors on a vector space, tensors on a manifold. Symmetric and skew-symmetric tensors space and differential forms on a manifold. Metric and symplectic form.
