Topics in Geometry & Topology

1. Introduction
    - Logic
    - Proof Writing
    - Set Theory
2. Euclidean Geometry
    - Axiomatic Systems
    - Euclid's Five Postulates
    - Important Theorems in Euclidean Geometry
3. Neutral Geometry
    - Axioms for Plane Geometry
    - Some Important Theorems in Neutral Geometry
    - Parallel Postulates
    - Statements Equivalent to the Parallel Postulate In Euclidean Geometry
4. Hyperbolic Geometry
    - The Universal Hyperbolic Theorem
    - Some Important Theorems in Hyperbolic Geometry
    - The Critical Function
    - Area and Circles in Euclidean, Neutral, and Hyperbolic Geometries
    - Hyperbolic Geometry Models
5. Topology of the Real Line
    - Equivalence Relations and More Set Theory
    - Open Sets, Closed Sets, and Topologies
    - Continuity
    - Connectedness and Compactness
    - Homeomorphisms

RECOMMENDED TEXTBOOK: The geometry portion of the course follows the book *Foundations of Geometry* by Gerard Venema.