Topic Outline

Math 6452 Introduction to Geometry and Topology I

Text: At the level of "Differential Manifolds" by Lawrence Conlon and "Algebraic Topology" by Alan Hatcher

- Brief review of basics of point set topology and classification of surfaces (if necessary)
- Fundamental group, van Kampen's theorem, covering spaces
- Definition of differentiable manifolds
- Vectors bundles
- Tangent vectors, vectors fields and flows
- Smooth functions on manifolds, derivatives
- Regular values, Morse functions, transversality, degree theory
- Tensors and forms