This course will be an introduction to Riemannian Geometry


2. Connections on vector bundles: curvature, holonomy, Bianchi identities, direct sum and tensor product connections.

3. Connections on the tangent bundle: The Fundamental Theorem of Riemannian Geometry, geodesics and the exponential map, the existence of convex neighborhoods.


7. The Bonnet-Myers Theorem (for complete manifolds of positive Ricci curvature).

8. Manifolds of positive curvature: Theorems of Synge, Weinstein, Frankel and others.

9. Conjugate points and The Index Lemma.

10. The Rauch Comparison Theorem.

11. The Cartan-Ambrose-Hicks Theorem.

12. The Toponogov Triangle Theorem and the Soul Theorem (sketches).

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