MATHEMATICS 232A

Riemannian Geometry

Text: *Riemannian Geometry*, by Peter Petersen

This is the first course in a two quarter introduction to Riemannian Geometry. Topics covered in the first course include the theory of manifolds, Riemannian metrics, isometries, connections, curvatures, tensors, geodesics, symmetry spaces and holonomies.

TOPICS	SUGGESTED NO. OF 50 MIN. CLASSES
Riemannian metrics (Ch. 1, §§ 1.1–1.3)	4
Manifolds, Riemannian Metrics, Isometries.	
Curvature (Ch. 2, §§ 2.1, 2.2, 2.5)	4
Connections, Curvature, Tensors.	
Examples (Ch. 3, §§ 3.1–3.5)	6
Warped Products, Hyperbolic Space, Complex Projective Space.	
Geodesics and Distance (Ch. 5, §§ 5.1–5.7)	9
Geodesics, Exponential Maps, Constant Curvature, Completeness.	
Symmetric Spaces and Holonomy (Ch. 8, §§8.1–8.4)	7
Symmetric spaces and holonomies..	

40 homework problems will be given during the classes.