Goal and prerequisites. Basic definitions and foundational theo-
rems of Riemannian geometry. The emphasis will be on concepts, examples
and results which have proved useful in a wide range of fields: differential
topology, general relativity, partial differential equations, applied mathema-
tics...the only (formal) prerequisite is one year of advanced calculus.

Grading. Based on homework sets. Problems may be proposed in class,
assigned from the text, or given in the course web page. Turn in 4 detailed
solutions by Thursday, Sept. 4, and another four every two weeks after that.

References. 1. M.P. do Carmo, Riemannian Geometry (Birkhäuser
1992) (text for the course)
2. F. Warner, Foundations of Differentiable manifolds and Lie groups
(Scott, Foresman and Co., 1971)
3. I. Chavel, Riemannian Geometry: a Modern Introduction (Cambridge
U.P. 1993)

Main topics:
1. Differentiable manifolds
2. Affine connections, Riemannian metrics, curvature tensor
3. Exponential map, Jacobi fields, volume growth
4. Completeness, comparison theorems
5. Geometry of immersions (and of submersions)
6. Lie groups and isometry groups
7. Space forms, symmetric spaces and holonomy
8. Morse theory of geodesics
9. Curvature and the fundamental group