MATHEMATICS 138B

INTRODUCTION TO DIFFERENTIAL GEOMETRY II

Text: *Differential Geometry of Curves and Surfaces*, by M. Do Carmo

Topics covered include curvature, geodesics and the Gauss-Bonnet Theorem.

TOPICS	SUGGESTED NO. OF WEEKS' COVERAGE

Intrinsic geometry of surfaces 3
   (§§ 4.4–4.7)

> Gauss' Theorema Egregium, parallel transport and covariant differenti-
> ation, geodesics, exponential sprays, the Gauss-Bonnet Theorem and its
> applications, models for hyperbolic geometry.

Topics in global differential geometry 5
   (Ch. 5)

> Completeness and the Hopf-Rinow Theorem, first and second variations
> of arc length, Bonnet's Theorem for surfaces with positive curvature,
> Hadamard's Theorem for surfaces with negative curvature.

This outline leaves substantial time for additional topics to be chosen by the instructor.