

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
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Intrinsic geometry of surfaces3 (§§ 4.4–4.7)	
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Gauss' Theorema Egregium, parallel transport and covariant differentiation, geodesics, exponential sprays, the Gauss-Bonnet Theorem and its applications, models for hyperbolic geometry.

Topics in global differential geometry 5 (Ch. 5)	
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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.