MATHEMATICS 563 A1
Introduction to Differential Geometry
Fall Semester 2007

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Lectures: MWF 11-12 in MCS B33

Text: *Differential Geometry*, by Andrew Pressley, Springer-Verlag, 2002, 3rd Printing; ISBN 182331526

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Content: Geometry, of course, is the study of "shapes" such as lines and surfaces as well as their higher dimensional analogs. Differential geometry is an application of the ideas from calculus to characterize geometric objects. An example of a question which differential geometry addresses is, for example, "What is the proper notion of the curvature of a surface?" This subject is an active area of mathematical research and has various applications in science and engineering, *e.g.*, computer graphics, Einstein's theory of gravitation (general relativity), quantum physics, to name a few.

Prerequisites: The material in the course is nontrivial so please make sure that you satisfy the prerequesites. The prerequisites to this course are multivariate calculus and some linear algebra. A knowledge of analysis or topology is useful but is not necessary. We will introduce these ideas as necessary.

Homework: Homework will be assigned periodically and will generally be due the following week. Late homework will not be accepted. Students may discuss homework with each other (and are encouraged to do so) but all written work must be prepared independently.

Exams: There will be a midterm exam and a final exam.