

Math 7350, section 19794      Spring 2009

Geometry of Manifolds

Classes: TuTh 1:00-2:30pm, 350 PGH

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Office hours:	by appointment		

This course is the second half of the *Topology/Geometry of Manifolds* sequence and it assumes familiarity with the fundamental ideas of Topology.

We will introduce the basic notions of differential geometry (manifolds, vector bundles, differential forms, integration on manifolds) and extend the results of multivariate analysis to this setting. Some of the fundamental results we discuss are the Implicit Function theorem and its relatives (the Local Inversion and Rank theorems), the theorem of Stokes (which extends the Green theorem of Calculus III), the de Rham theorem (which defines the cohomology groups of a manifold through differentiable forms, linking topological and differentiable data), and the theorem of Frobenius (which characterizes foliations by their tangent vectors). Time permitting, we will also consider results of a global nature.

We will use mainly the book “Introduction to Smooth Manifolds” by John M. Lee (a list of corrections is at [www.math.washington.edu/~lee](http://www.math.washington.edu/~lee)). If needed, additional notes will be provided and other books will be placed on reserve in the library.

If you have question please ask them in class (this helps everyone) or come to see me.

**Grading.** There will be one midterm, the final, and regular homeworks.

Make-up exams are offered only in exceptional situations. Late HW’s will be penalized by 20%.

The course grade is approximately based on a total score of 400 points (100 points for the midterm, 200 for the final, and 100 for the homeworks).

Please bring your student ID to all exams.

**Homeworks.** Problem assignments will be given throughout the semester. Even if you discuss the problems with your colleagues or me, you have to write the solutions on your own! Please write the solutions clearly and with care. Take this as an exercise in “writing mathematics”.

I will also assign problems that you do not have to turn in, but which are important for understanding the material. Try to work these problems by yourself, or together with your colleagues.

**WWW.** Information related to this course will be posted on the web. There is a link on my web-page, <http://www.math.uh.edu/~torok/>.

I reserve the right to change these policies if I think it is necessary. I hope you enjoy the course.