Syllabus: Math 781,Differentiable manifolds, UNC 2018 Fall

A manifold is a space that locally looks like Euclidean space but globally not necessarily. Manifolds are central for classical mechanics, general relativity, algebraic geometry, topology, and some parts of analysis.

In this course we will develop tools to do analysis on manifolds, consider some related topics (Lie groups), and introduce a global invariant, the DeRham cohomology.

**Meeting time:** Tu, Th 2:00-3:15, PH-301

**Instructor:** Richard Rimanyi, CP-429, [rimanyi@email.unc.edu](mailto:rimanyi@email.unc.edu)

**Office hours**: T, Th: 3:15pm

**Texts**:

L. W. Tu: An introduction to manifolds, Springer 2011

N. Hitchin: Differentiable manifolds (lecture notes)

**Other reading**:

B. A. Dubrovin, A. T. Fomenko, S. P. Novikov: Modern Geometry II;

M. Spivak: A comprehensive introduction to differential geometry I

**Prerequisites**: calculus of several variables, knowledge of topology and linear algebra

**Grading** will be based on weekly quizzes, and a Final Exam.

**Homework:** there will be no regular HW, but on Thursdays a list of problems will be announced at [www.unc.edu/~rimanyi/math](http://www.unc.edu/~rimanyi/math)781. Some of these problems will be the quiz the following Tuesday.

No Sakai or similar site will be used. The **final exam** will be given in compliance with UNC final exam regulations and calendar (Saturday, 8th of December, at noon).

Reading the textbook itself is not sufficient. You will need to review your class notes regularly. It is also very important that you work many problems every week beyond the quiz problems. Group study is encouraged; questions in class are also encouraged.

It is expected that each student will conduct him or herself within the guidelines of the UNC **Honor System**.

The instructor reserves the right to make changes to the syllabus. These changes will be announced as early as possible.