Syllabus and course information: Further Topics in Differential Geometry, 1 — MAT 6932/4930 — Fall 2015

MWF 8th period, LIT 233

Link to class home page

Instructor: David Groisser

Office Hours: Tentatively Monday 5th period (11:45-12:35) and Wednesday & Friday 9th period (4:05-4:55). Please come early in the period or let me know to expect you later; otherwise I may not stay in my office for the whole period. See my schedule for updates. Students who can't make scheduled office hours may see me by appointment on most weekdays.

Prerequisite: A year of differential geometry at the level of MTG 6256-6257.

Textbook: None required. However, there are two that I'll recommend, both of which area available online from the UF library:

1. Isaac Chavel, *Riemannian Geometry: A Modern Introduction,* 2nd edition, Cambridge University Press (2006).
   If you access Chavel's book online through the UF library, you may reach a page that, for some reason, lists the publication-date as April 2002. You've reached the correct book. Inside, the publication-date is stated to be 2006.
2. Peter Petersen, *Riemannian Geometry,* 2nd edition, Springer (2006).
   Note that that's "Petersen" with an *e*, not "Peterson" with an *o*.

I will probably draw material (and possibly exercises) from both of these books. Petersen takes longer than I'd like to get to geodesics; Chavel gets there more quickly than I'd like. Chavel's notation is closer to mine than Petersen's, but neither author's notation is identical to mine.

Syllabus (course content): This course is intended to be the first semester of a two-semester sequence. I plan to spend most of the fall semester on various topics in Riemannian geometry, including curvature, geodesics, Riemannian manifolds as metric spaces, the Hopf-Rinow Theorem, parallel transport, and some curvature-based comparison theorems (including theorems relating curvature-bounds to global topology). Possible additional topics include applications to Lie groups and homogeneous spaces; submanifolds and the second fundamental form; Riemannian submersions; cut locus; the structure of convex sets.

For a list of some possible topics for the spring semester, click here.

Exams, Homework, and Grading: There will be no exams. Homework will include some required hand-in problems, and some optional problems for students who want to explore further. I will also expect students to study their notes to keep up with the lectures. Grades will be based on homework and attendance. The workload needed to receive an A will not be burdensome; however, your attendance will need to be good.

Attendance: I work hard to prepare my lectures, and **I expect all enrolled students to attend all of them**, with the usual allowances for illness, emergency, etc. When you must miss a class, please obtain notes from a classmate.

Student Honor Code. UF students are bound by The Honor Pledge, which states:

> We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

The Honor Code (here) specifies a number of behaviors that are in violation of this code, and the possible sanctions. Furthermore, students are obligated to report to appropriate personnel any condition that facilitates academic misconduct. If you have any questions or concerns about student conduct, please consult me.

Accommodations for students with disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. See http://www.dso.ufl.edu/drc.

Letter grades and their grade-point equivalents at UF: see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.