Math 563H: Differential Geometry of Curves & Surfaces
Spring 2010: Tuesdays & Thursdays, 11:15–12:30
Lederle Graduate Research Tower (LGRT) 119

Professor: Rob Kusner, LGRT 1435G (Office [54]5-6022) & LGRT 1535 (GANG Lab [54]5-4605)
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office hours: after class till around 2 (by appointment)

The text, *Curves and Surfaces (second edition)* by Sebastian Montiel and Antonio Ros, originally published in Spanish, is appealing because of its emphasis on natural, global geometric results (especially variational problems, leading to the theory of minimal and constant mean curvature surfaces, to which UMass mathematicians have made important contributions). We'll draw upon many topics covered in the text, but not follow it slavishly, and also introduce some topics not covered in the text (especially the calculus of differential forms and its application to the intrinisc geometry of surfaces, nicely treated in Barrett O'Neill's classic *Elementary Differential Geometry*).

On my website (www.gang.umass.edu/~kusner/class/563hw) you can find an outline and schedule of topics (updated weekly), problems to think about or turn in, hints for these problems, and commentary on the cosmic significance of what we are doing.

Class attendance is expected. Besides the value of class participation, there may be a few in-class activities from time to time which you won't want to miss!

Homework will be collected bi-weekly, graded and discussed with you individually. There will also be an opportunity for a research project with an oral presentation in April, and a comprehensive (take-home) final in May, which I will expect you to submit electronically as a .pdf file, preferably prepared using mathematical typesetting software (like a flavor of *TeX*).

Meeting deadlines is essential. No late homework will be accepted, but I will try to keep the workload reasonable. You are encouraged to submit your best effort, even if you haven't resolved every detail.

Grading will be based in (roughly) equal parts on the homework, the research project/presentation and the final exam.