

## Math 240A

### Course Outline and Information

Fall 2009

**Lecture:** MWF 1:00 - 1:50; Phelp 1420

**Text:** W. M. Boothby, An introduction to differentiable manifolds and Riemannian geometry. Academic Press, Revised 2nd edition, 2003.

**Reference:** Thierry Aubin, A course in differential geometry. Graduate Studies in Mathematics, Vol. 27, AMS, 2001

John Lee, Introduction to smooth manifolds. Graduate Texts in Mathematics, Vol. 218, Springer, 2009.

**Instructor:** Guofang Wei, South Hall 6503, Ext: 4282

email: wei@math.ucsb.edu

**Office hours:** MWF 9:00 - 10:00 or by appointment

**Homework:** There will be about six homework assignments, which will also be posted on my web page <http://www.math.ucsb.edu/~wei>.

**Grades:** 25% homework; 35% midterm (take home); 40% final (in class)

**Final:** December 10, Thursday, 4:00 - 7:00pm

### Course Material:

1. *Functions of several variables and mappings* (Chapter 2: 2.1, 2.2, 2.6, 2.7)
2. *Topological manifolds* (Chapter 1: 1.3, 1.4)
3. *Submanifolds in Euclidean space*
4. *Differential structures and differentiable manifolds, Lie groups* (Chapter 3)
5. *Tangent bundles, vector fields, differential forms* (Chapter 2: 2.3-2.5; Chapter 4: 4.1, 4.2; Chapter 5: 5.1-5.4)
6. *Integration on manifolds, de Rham cohomology* (Chapter 6)