Math 537B
Global Differential Geometry
Spring 2014

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Textbook: We will draw from a variety of sources and have regular class notes.

Additional References :

- Foundations of differentiable manifolds and Lie groups, by F. Warner
- Riemannian Geometry, by Peter Petersen**.**
- Lectures on Differential Geometry, by R. Schoen and S. T. Yau.
- Comparison Theorems in Riemannian Geometry, by J. Cheeger and D. Ebin.
- The Ricci flow: An introduction, by B. Chow and D. Knopf.
- Discrete Differential Geometry: An Applied Introduction, `http://www.siggraph.org/asia2008/attendees/courses/14.php`.
- Introduction to circle packing: The theory of discrete analytic functions, by K. Stephenson.
- Lecture notes on mean curvature flow, by C. Mantegazza.

Homework: Instead of regular homework assignments, students will be assigned problems labeled "Student Problems" from the notes, usually two students per problem. The assigned students should be prepared to present these problems when they come up in the lecture (with help from the class and teacher).

Grades: Grades are based on class participation and assigned problems

Tentative approximate schedule

Weeks	**Topic**
1-2	Hodge theory and Bochner technique
3-4	Discrete differential geometry
5-7	Ricci flow on 2D
8-9	Discrete conformal geometry
10-11	Mean curvature flow
12-13	Spectral geometry
14	Einstein manifolds, curvature functionals, Ricci flow