MATH 234A, FALL 2003

CALCULUS ON MANIFOLDS

Course Outline

Instructor: Viktor Ginzburg
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Meetings: TTh 12:00–1:45am, 289 Kerr

Text: *A Comprehensive Introduction to Differential Geometry* by M. Spivak; Third Edition, Publish or Perish, 1999

Homework assignments and exams: There will be regular weekly homework, one midterm and a final.

Syllabus. This is an introductory course in differential topology and analysis on manifolds. Topics to be covered:

- Smooth manifolds and the tangent bundle (Chapters 1-3).
- Tensors on manifolds and vector fields (Chapters 4, 5).
- Differential forms and integration on manifolds; Stokes' theorem (Chapters 7, 8). An introduction to de Rham cohomology.
- Possible additional topics: Frobenius' theorem (Chapter 6), Sard's lemma and transversality, a more detailed treatment of de Rham cohomology.