

Math 537 - Introduction to Differentiable Manifolds

Winter 2011

Time and Place: MoWeFr 11:00AM-12:00PM in 4096 East Hall

Required Text: V. Guillemin and A. Pollack, *Differential topology*.

Suggested Texts: Many - see the course homepage

Instructor: Pat Boland

Office Hours: After class in 4843 East Hall and by appointment

Email: pboland@math.umass.edu

Homepage: http://www.math.lsa.umich.edu/~pboland/537_W2011.html

Course Overview: This is an introductory course on differentiable manifolds. We focus on the topological rather than the geometric aspects of these beautiful spaces. Prerequisites include courses equivalent to Math 513 and Math 590. The goals of the course are to introduce basic concepts and results in the subject area, give adequate references that promote further self study, and present examples that arise in current research.

Content: We will cover all chapters in the required text. The major ideas, namely Morse theory, the Lefschetz fixed point theorem, the Poincaré–Hopf theorem, and deRham cohomology, will be presented and modern generalizations will be briefly discussed. As time permits, we will investigate Lie Groups and some concepts from differential geometry (e.g. curvature and geodesics).

Grading Scheme: Three factors contribute to your final grade.

Assignment	% of Final Grade
Homework	40
Midterm Exam	30
Final Exam	30

Homework: There will be about ten homework assignments. Each assignment will consist of about eight (potentially multiple part) problems. They will be available on CTools and usually due on Friday.

Exams: The midterm exam will be a take home exam. I will post it on CTools on Monday, February 21. The final exam is at the regularly scheduled time mandated by the university.

Midterm Exam: Friday, February 25 (due at the beginning of class)

Final Exam: Monday, April 25, 4:00PM - 6:00PM

Important Dates:

First Class: Wednesday, January 5

Add/Drop Deadline: Tuesday, January 25

No Class: Monday, January 17 and the week of winter vacation

Last Class: Monday, April 18

Please inform me immediately if you have the right to special accommodations for exams, whether it be for athletic, extracurricular, religious, or personal reasons. I will need documentation.