

AMS 569

Probability Theory I

Spring 2001

Instructor: Folkert

Tangerman

Schedule: TuTH 2.20pm-3.40 pm,

Office: Math 1-101 Room: Physics P115

Phone: 632-9340 Office Hours: TBA

Email: tangerma@ams.sunysb.edu or by appointment

Course web site: www.ams.sunysb.edu/~tangerma/AMS569/569.html

Required text: Alan F. Karr, *Probability*, Springer Verlag, 1993.

The objective of this course is to provide a solid mathematical foundation of probability theory, the associated measure theory, and a number of classical examples: random walks, stochastic processes and random fields. The mathematical foundation of probability theory is rather sophisticated, and its discovery is one of the triumphs of 20th century mathematics. An important part of this course then is to learn the mathematical structure of this theory, and become familiar with methods of proof for this subject. A prior course in mathematical analysis (say AMS504) is a prerequisite; students should be familiar with basic definitions in topology (What is a topology?) and notions of convergence in that context.

As the class progresses you will be able to answer such simple questions as:

- what is a random variable?
- how to construct random variables?
- what are reasonable notions of convergence of random variables?
- what is the meaning of convergence in the central limit theorem?
- Borel-Cantelli: what is that?
- What is L^2 ?
- What is Brownian motion? (continuous time has some tricky details we may not get to.)

Prerequisite: AMS 504 or equivalent

3 credits

Grading Policy: Problem sets will be assigned approximately every two weeks, and will comprise 40% of the final grade. There will also be a final exam (60%).

If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you contact the staff in the Disabled Student Services office (DSS), Room 133, Humanities, 632-6748v/TDD. DSS will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability are confidential.

Course Schedule

Week 1,
Week 2,
Week 3,
Week 4,
Week 5,
Week 6,
Week 7,
Week 8,
Week 9,
Week 10,
Week 11,
Week 12,
Week 13,
Week 14,
Week 15,

AMS 569



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