UPPSALA UNIVERSITET
Matematiska institutionen
Erik Broman

10 mars 2015

PhD course in Probability (Spring 2015)

Credits: 5 hp

Content: Topics in the course

- Discrete probability and review of basic concepts.
- Measure and probability.
- Sums of independent random variables (Strong Law of Large Numbers, etc).
- Weak convergence, Tightness, different characterizations of WC, compactness.
- Random walks on $\mathbb{Z}^d$, recurrence and transience.
- Donsker's theorem.
- Special topics in probability (percolation, fractal percolation).

Lectures: There will be at least 20 two-hour lectures. Depending on how much time we will need reviewing (?) topics from analysis such as measure theory/topology etc a few more lectures might be added.

Lecturer Univ.lektor Erik Broman, docent; Room: Å 74110; Phone: 471 3204; E-mail: broman@math.uu.se.

Examination: Home assignments.

Time-plan (will be continuously updated):

Lecture #	Date	Keywords
1	19/1	Discrete probability
2	21/1	Discrete probability
3	27/1	Measure and probability
4	28/1	Measure, integration and probability
5	2/2	Measure, integration and probability
6	3/2	Almost sure convergence
7	4/2	Almost sure convergence, Strong Law of Large Numbers
8	11/2	Weak Convergence on $\mathbb{R}$.
9	17/2	Weak Convergence on $\mathbb{R}$.
10	19/2	Weak Convergence on $\mathbb{R}$ and general metric spaces.
11	24/2	Weak Convergence on general metric spaces
12	2/3	Weak Convergence on general metric spaces
13	3/3	Random walks on $\mathbb{Z}^d$
14	4/3	Random walks on $\mathbb{Z}^d$
15	9/3	Percolation
16	11/3	Percolation
17	17/3	Percolation
18	19/3	Percolation
19	23/3	Fractal Percolation
20	27/3	Fractal Percolation

Observe that the planning is preliminary and **will** be updated/adjusted. Make sure that you look back regularly!