Plan STK2130-sp19

Textbook: Sheldon M. Ross Introduction to Probability models, 11th ed. Academic Press, Elsevier.

Lectures

Week 3: Introduction

Week 4-8: Markov chains in discrete time

- Classffication of states
- Long-Run proportions and limiting probabilities
- The gambler's ruin problem
- Mean time spent in transient states
- Branching processes
- Time reversible Markov chains
- Markov chain Monte Carlo methods

Week 9-12: Exponential distribution, Poisson process

- The exponential distribution
- The Poisson process

Week 13: Midterm exams, no class

Week 14-15: Continuous time Markov chains

- Birth and death processes
- The transition probability function
- Limiting Probabilities
- Uniformization
- Computing of transition probabilities

Week 16: Easter

Week 17-18: Continuous time Markov chains cont.

Week 19:   Renewal theory

- Distribution of N(t)

Week 20: Brownian motion.

- Hitting time end the maximum value
- Variations of Brownian motion

Mandatory assignment: Deadline March 28.

Final: June 6.