

Instructors: Peter Guttorp and Vladimir Minin

Time: Tuesdays and Thursdays, 1:30 - 3:20 pm

Place: Communications Building, room 228

Office Hours:

- V. Minin: M 11:00am - 12:00pm, W 1:30-2:30pm and by appointment (vminin@u)
- P. Guttorp: T 9:30am - 10:30pm, F 2:00-3:00pm and by appointment (peter@stat)

Course Web Page: www.stat.washington.edu/vminin/Stat518/Spring2009/
Check the web page regularly for announcements.

Text: none.

Prerequisites

Stat 516 and Stat 517 or an equivalent preparation in stochastic processes.

Grading

Pass/Fail. The grade will be based on participation, presentations and project reports.

Project description

For your project, you can either perform an in-depth analysis of a research paper or you may choose to start with your own problem and use stochastic processes to address some statistical aspect of this problem. In both cases, the goal of the project is to immerse you in a concrete application of stochastic processes. Ideally, your project should include three components:

1. An interesting statistical problem motivated by a scientific/engineering application.
2. Non-trivial use of stochastic processes.
Note that although vanilla MCMC may not qualify, MCMC algorithms with interesting twists (e.g. sequential Monte Carlo/particle filtering, coupling from the past, population Monte Carlo, etc.) are welcomed.
3. Analytical and/or computational challenges that need to be met to solve the problem.

When analyzing a paper, you are expected to understand the theoretical derivations and fill in missing details when necessary. For papers with algorithmic components, you will implement the algorithms and reproduce numerical results of the paper when possible. Please keep in mind the time constraints and consult the instructors prior to attempting ambitious computational analyses. Although you need to dig deep into the paper, you are also expected to understand a larger picture, which includes researching alternative approaches to the problem under study. You are not required to implement these alternative approaches unless you are advised to do so by the instructors.

You will deliver an oral presentation on your project at the end of the quarter, around week 10. **Written reports are due by May 28.** More specific guidelines on the report format will be provided later in the quarter.

Project proposal

Everyone should turn in a **one page project proposal by Friday, April 10.** In your proposal, you should outline a plan for your paper/data analysis, state your objectives, and explain how stochastic processes fit into your project.