Statistics 542
Spring 2016

Course Description: Bayesian Methods and Computation

The goal of this course is to develop sophisticated tools for probability modeling and data analysis from the Bayesian perspective. Key topics covered in the course include hierarchical models, mixture models and Monte Carlo simulation techniques.

Prerequisites: Probability (Statistics 430, 510 or equivalent) or permission of instructor. Statistics 541 is also highly recommended but not required.

Professor:
Dr. Shane Jensen   JMHH 463
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Lectures: TuTh 12:00-1:30pm   JMHH F38

Required Textbook:
Bayesian Data Analysis (3nd Edition) by Gelman, et.al.

Required Software:
The R statistical package is needed and can be downloaded at `www.r-project.org`

Course Topics

1. Introduction to Bayesian Inference (Ch.1)
2. Simple Parametric Models (Ch. 2, 3)
3. Regression Models from the Bayesian Perspective (Ch. 14,15)
4. Hierarchical and Mixture Models (Ch. 5)
6. Optimization Algorithms for Model Estimation (Ch. 13)
7. Monte Carlo Simulation Algorithms for Model Estimation (Ch. 10,12,13)
8. Model Checking (Ch. 6,7)
10. Nonparametric and Semiparametric Bayesian models (Ch. 23)
11. Hidden Markov Models

Other Course Information

My office hour: Tu 5-6pm JMHH 463

Course Website: stat.wharton.upenn.edu/~stjensen/stat542.html

Evaluation:

Your course grade will be calculated from homeworks. Homework assignments will be assigned every three weeks or so and will be turned in for grading. ***No late homework will be accepted, for any reason whatsoever.***

Important Dates:

Thursday, January 14	First day of class
Tuesday, March 8	No Class -- Spring Break
Thursday, March 10	No Class -- Spring Break
Tuesday, April 26	Last day of class