

## SYLLABUS

STA 6934

Bayesian Theory

Spring, 2008

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### Objective:

The objective of the Bayesian Theory course is to provide students with a solid foundation of the theory underlying the Bayesian paradigm. In particular, we will discuss issues related to selection of priors, Bayesian inference both exact and asymptotic, Bayesian model selection, high dimensional problems, and if time permits, some issues related to Bayesian robustness.

### Policy:

A student's grade for the Fall Semester is determined from homework (30%), one midterm (30%) and a comprehensive final (40%).

### Course Outline:

1. Bayesian Inference
2. Large Sample Methods
3. Selection of Priors
4. Hypothesis Testing and Model Selection
5. High-dimensional Problems
6. Bayesian Robustness

Textbook: An Introduction to Bayesian Analysis: Theory and Methods. J.K. Ghosh, M. Delampady and T. Samanta. Springer, New York.

### References:

1. J.O. Berger: Statistical Decision Theory and Bayesian Analysis, 2nd Edition.
2. J.M. Bernardo and A.F.M. Smith: Bayesian Theory.
3. G.E.P. Box and G.C. Tiao: Bayesian Inference in Statistical Analysis.
4. B.P. Carlin and T.A. Louis: Bayes and Empirical Bayes Methods for Data Analysis, 2nd Edition.
5. A. Gelman, J.B. Carlin, H.S. Stern and D.B. Rubin: Bayesian Data Analysis, 2nd Edition.
6. J.A. Hartigan: Bayes Theory.
7. P.M. Lee: Bayesian Statistics: An Introduction.
8. S.J. Press: Bayesian Statistics: Principles, Models and Applications
9. C.P. Robert: The Bayesian Choice, 2nd Edition.