BIOST578B - BAYESIAN BIOSTATISTICS
SPRING 2007

INSTRUCTOR:
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Assistant Professor
Department of Biostatistics
University of Washington

CONTACT INFORMATION:
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CLASS MEETING TIMES:
MW 9:30 – 10:50am

CLASS LOCATION:
Health Sciences Building, T360A

COURSE DESCRIPTION:
This course provides an overview of Bayesian methods applied to statistical problems in health sciences. We discuss prior elicitation, inference and decision making, and Bayesian computation in problems ranging from medical diagnosis, design and monitoring of clinical trials, meta-analysis and survival analysis. Implementation of models via WinBugs or Splus/R is presented as appropriate.

COURSE LEARNING OBJECTIVES:
In this course we discuss basic concepts and methods of statistical inference under the Bayesian approach. Upon completion of the course, students should be able to 1) use these methods to analyze their own data, 2) interpret the results from their analysis, 3) recognize and assess the role of prior information on inference and decision making and 4) use a standard statistical software package in performing analyses as well as implement their own code for analysis.

PRE-REQUISITES:
BIOST514 & BOST515 (or equivalent), STAT 512 & STAT 513 (or equivalent) or instructor’s permission. Familiarity with statistical computing in R or Splus is not required, but highly recommended.

GRADING: This is a Credit/No Credit course. Students are expected to complete satisfactorily all assignments to receive credit.

Homework: There will be a small problem set due approximately every week.

Final project: There will be a final project in which students will be expected to analyze a data set and hand in a written report.
COURSE SESSION SCHEDULE (tentative):
[03/26]: Overview of the Bayesian Approach
[03/28]: Prior Distributions
[04/02]: Prior Elicitation
[04/04]: Statistical Inference and Decision Making (I)
[04/09]: Statistical Inference and Decision Making (II)
[04/11]: Large Sample Inference and Connections to Standard Statistical Methods
[04/16]: Posterior Simulation and Integration
[04/18]: Markov Chain Monte Carlo Methods (I)
[04/23]: Markov Chain Monte Carlo Methods (II)
[04/25]: Linear Models
[04/30]: Generalized Linear Models
[05/02]: Survival Models
[05/07]: Hierarchical Models
[05/09]: Mixture Models
[05/14]: Missing Data
[05/16]: Design and Monitoring of clinical trials (I)
[05/21]: Design and Monitoring of clinical trials (II)
[05/23]: Special Topics
[05/28]: Holiday (Memorial Day)
[05/30]: Special Topics

TEXTBOOKS & READINGS:

Required Textbooks:

None. The first three textbooks from the recommended list (below) are available in the South Campus Bookstore for purchase.

Recommended Textbooks:


Academic Accommodations: To request academic accommodations due to disability, please contact Disabled Student Services, 448 Schmitz, (206) 543-8924(V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to me so that we can discuss the accommodations you might need in this class.