STAT 460
Bayesian Statistics

Fall 2012
Day Course

Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: Dr. Tim Swartz

Prerequisite:

STAT 330 and STAT 350.

Textbook:

No textbook required.

References:

Bayes and Empirical Bayes Methdos for Data Analysis (Carlin &Louis)
Bayesian Data Analysis (Gelman, Carlin, Stern & Rubin)

Calendar Description:

The Bayesian approach to statistics is an alternative and increasingly popular way of quantifying uncertainty in the presence of data. This course considers comparative statistical inference, prior distributions, Bayesian computation, and applications.
Quantitative

Outline:

1. The basics:
- the Bayesian paradigm
- comparative statistical inference

2. Priors:
- conjugate priors
- prior elicitation
- reference priors
- improper priors
- discrete mass priors

3. Computations:
- quadrative
- importance sampling
- Markov chain Monte Carlo

4. Other topics:
- testing via Bayes factors
- interval and point estimation
- elementary decision theory
- hierarchical models
- Dirichlet process

5. Applications:

Grading Scheme:

Assignments – 20marks
Midterm 1 – 15marks
Midterm 2 – 15 marks
Final – 50marks
Grading is subject to change.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Students are encouraged to review policies pertaining to academic integrity available on Student Services webpage at http://students.sfu.ca/academicintegrity.html

Revised June 15, 2012