Statistics 519/619   Bayesian Statistics

(see Course Descriptions for the applicable academic year: http://www.ucalgary.ca/pubs/calendar/)

Reference Text: "Bayesian Data Analysis" by Gelman, Carlin, Stern, Rubin, Third edition.

Syllabus

Topics

Text Chapters 1-3, 5, 6, 10-12, 14.

Reading assignments will be used to cover some of the later chapters and/or readings from the current literature/recent journals.

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Statistics 519 (Bayesian Statistics)

1. By the end of the course, students will be expected to be able to explain the steps of Bayesian data analysis.

2. By the end of the course, students will be expected to be able to identify and explain the difference between the prior, likelihood, posterior, and predictive.

3. By the end of the course, students will be expected to be able to construct prior distributions and calculate posterior and predictive distributions.

4. By the end of the course, students will be expected to be able to identify and construct appropriate full probability models for a variety of different data sets.

5. By the end of the course, students will be expected to be able to construct simple hierarchical and mixture models.

6. By the end of the course, students will be expected to be able to carry out the exact Bayesian data analysis for standard single-parameter models and for some simpler multiparameter models.

7. By the end of the course, students will be expected to be able to use software to carry out a Bayesian data analysis for more complicated models.

8. By the end of the course, students will be expected to be able to explain the basics of, and carry out, Gibbs sampling and MCMC.

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2017/11/10
RJS
Course outcomes added