

Syllabus for Econ 613: Seminar in Applied Econometrics (Introduction to Bayesian
Econometrics)
Rutgers University
Department of Economics
Spring, 2016.

Contact Details:

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Course Details:

Lecture Time: TTH 11.30-12.50pm
Location: New Jersey Hall, Room 101

Course Overview

This course is an introduction to Bayesian methods in econometrics. The course will consist of two parts: The first part dealing with implementation and application of Bayesian methods to economics and the second part dealing with a survey of Bayesian applications in time series, finance and macroeconomics. The course will introduce students to simulation methods and their application to economic problems.

Texts

The text that will be used in this class is

Geweke, John F. (2005) *Contemporary Bayesian Econometrics and Statistics*, John Wiley and Sons, Hoboken, New Jersey, USA. (ISBN 978-0-471-67932-5)

This is an excellent text and will be used as the text for the majority of the course.

This, however, is not the only text written about the topic of Bayesian econometrics. The following texts all have their good points and are useful resources for an applied Bayesian Econometrician.

Bernardo, J.M. and A.F.M. Smith (1994) *Bayesian Theory*, John Wiley and Sons, Chichester, England. (ISBN 0 471 92416 4)

Bauwens, L., Lubrano, M. and J-F Richard, (1999) *Bayesian Inference in Dynamic Econometric Models*, Oxford University Press, Oxford, England.

Kim, C-J, and C. Nelson, (1999) *State-Space Models with Regime Switching: Classical and Gibbs-Sampling Approaches with Applications*, The MIT Press, Cambridge, MA.

Topics to be Covered:

The following is a tentative list of topics that will be covered in this course. I reserve the right to add or delete topics as the course progresses.

1. Introduction to the Bayesian Approach
 - Subjective Beliefs
 - Exchangeability and representation
 - Conditional probability
2. Some basics
 - Bayes Theorem
 - Prior Beliefs
 - Updating of Prior Beliefs with data
 - Posterior Beliefs
 - Bayesian Decisions and Point Estimation
 - Bayesian Inference and Credible Sets

- Model Comparison

3. Bayesian Analysis using Simulation Methods

- Direct Sampling
- Importance Sampling
- Markov chain Monte Carlo methods
- Computing Marginal Likelihoods
- Model Comparison and Specification
- Bayesian Communication

4. Applications

- The General Linear Regression Model and its Variants
- Vector Autoregressions
- State Space Models (including DSGE models)
- Models in Finance
- Non-linear models

The above list is indicative of the topics that will be taught and the order in which they will be taught in this course. The topics and their order may vary as the course proceeds.

Course Evaluation:

The grade for this course is made up from two components:

1. Class assignments (70% of course grade)
2. Term Project (30% of course grade)

Term Project

You are required to write a research paper in this course. The only requirement that I place on this paper is that it must use econometric techniques covered in this course. Note, however, that this course is an applied course. The term paper will be graded equally on its economic and econometric content.

Assignments

A number of assignments will be assigned throughout the course. All assignments must be attempted. A student cannot get a grade for this course if they have not attempted all assignments. Assignments are considered late if they are received after the end of class on the due date. Late assignments will receive a score of 0.

Office Hours

I am available by appointment. Please email me to set up a meeting if you want to discuss anything with me.