

# Bayesian Econometrics

## Instructor:

Cem Çakmaklı  
Assistant Professor of Economics  
Koç University

**Dates:** July 17 - 21, 2017, Monday-Friday, 3½ hour lectures every day; 14:00-17:30

## Course description

The aim of the course is to provide a comprehensive introduction to Bayesian inference in econometrics which has been used frequently in many areas of economics, finance and marketing research. The course starts with a discussion of fundamental differences between frequentist and Bayesian inference. Next, we consider Bayesian inference of standard econometric models including linear regression model with and without a general covariance matrix of error terms in univariate and multivariate settings. This part includes parameter estimation, prediction, and parameter and model evaluation from a Bayesian perspective. Since Bayesian inference requires advanced computational skills, an important part of the course involves the introduction of the major simulation techniques used in Bayesian inference denoted as (Markov Chain) Monte Carlo sampling. Finally, simple applications will be carried out during lectures using econometric software.

## Sources

Koop, G. (2003). Bayesian Econometrics, Wiley Geweke, J. (2005). Contemporary Bayesian Econometrics and Statistics, John Wiley & Sons,

Zellner, A. (1971). An Introduction to Bayesian Inference in Econometrics, New York: Wiley (Not up-to-date but one of the building blocks)

Box E.P.G., Tiao G. C. (1992), Bayesian Inference in Statistical Analysis, New York: Wiley (Not up-to-date but one of the building blocks)

Several articles,

## Software

WinBugs (free of charge), a statistical software for Bayesian analysis using Markov chain Monte Carlo (MCMC) methods.

Matlab (not free of charge but available in the PC labs) Ox (free of charge), an object-oriented matrix programming language

**Prerequisite:**

There is no special prerequisite for the course. However, a good statistical background, especially knowledge about discrete and concrete probability distributions such as Normal, Student's t, Gamma, Inverse Gamma, Wishart, Inverse Wishart, Beta, Dirichlet distributions would be extremely helpful. Students are strongly advised to study Appendix A and B of the Koop (2003) before coming to lecture.