



APPLIES TO ACADEMIC YEAR 2014/2015

## DRE 7014 Bayesian Econometrics

### Programme

Elective course

### Responsible for the course

Hilde C Bjørnland, Genaro Sucarrat

### Department

Department of Economics

### Term

According to study plan

### ECTS Credits

3

### Language of instruction

English

### Introduction

Please note that this course will be revised before it is offered again.

### Learning outcome

Students should be able to read critically papers and to use Bayesian inference for their own research, in each case in relation to the material that has been covered.

### Prerequisites

Knowledge of econometric models (regression models, qualitative and limited dependent variables, time series models). Ability at computer programming (e.g. in R, Matlab, GAUSS, Ox, C or any other language).

Admission to a PhD program is a general requirement for participation in PhD courses at BI Norwegian Business School.

External candidates are kindly asked to attach confirmation of admission to a PhD programme when signing up for a course with the doctoral administration if they want to take exams. However, candidates can be allowed to sit in on courses by approval of the course leader. Sitting in on courses does not permit registration for courses, handing in exams or gaining credits for the course. Course certificates or conformation letters will not be issued for sitting in on courses

### Compulsory reading

#### Books:

Bauwens, Luc, Michel Lubrano and Jean-Francois Richard. 1999. Bayesian inference in dynamic econometric models. Oxford University Press  
Geweke, John. 2005. Contemporary Bayesian econometrics and statistics. John Wiley  
Koop, Gary. 2003. Bayesian econometrics. Wiley  
Lancaster, Tony. 2004. An introduction to modern Bayesian econometrics. Blackwell  
Zellner, Arnold. 1971. An Introduction to Bayesian Inference in Econometrics. Wiley

#### Other:

Additional material (e.g. handouts, articles, etc.) may be distributed or referred to during the course

### Recommended reading

#### Course outline

1. Concepts for Bayesian Inference
  - Bayesian inference
  - Criteria for evaluating statistical procedures
  - Probability: objective or subjective
2. Numerical Methods for Bayesian Inference
  - Need for numerical integration

- Deterministic integration
  - Monte Carlo integration
3. Bayesian Inference for Regression Analysis
- Regression with non-informative prior
  - Regression with conjugate prior
  - Partially linear model
  - Regression with non-conjugate prior
  - Heteroskedastic errors
  - Autocorrelated errors
  - IID student errors
4. Bayesian Inference for vector autoregressive models
- Unrestricted VAR and multivariate regression models
  - Posterior with NIP
  - Posterior with informative prior
  - The Minnesota prior
  - Restricted VAR and SURE models
5. Bayesian Inference for volatility models
- ARCH models
  - Stochastic volatility models

### **Computer-based tools**

It's learning/homepage, statistical programming language (e.g. R, Matlab, GAUSS, Ox, C, etc.)

### **Learning process and workload**

A course of 3 ECTS credits corresponds to a workload of 80-90 hours.

Lectures: 15 h.

Please note that while attendance is not compulsory in all courses, it is the student's own responsibility to obtain any information provided in class that is not included on the course homepage/It's learning or text book.

### **Examination**

Course paper.

Graded pass/fail

### **Examination code(s)**

DRE 70141 course paper counts for 100% of the final grade in the course. The grade scale is pass/fail

### **Examination support materials**

### **Re-sit examination**

Re-takes are only possible at the next time a course will be held. When the course evaluation has a separate exam code for each part of the evaluation it is possible to retake parts of the evaluation. Otherwise, the whole course must be re-evaluated when a student wants to retake an exam.

### **Additional information**

#### **Honor Code**

Academic honesty and trust are important to all of us as individuals, and represent values that are encouraged and promoted by the honor code system. This is a most significant university tradition. Students are responsible for familiarizing themselves with the ideals of the honor code system, to which the faculty are also deeply committed.

Any violation of the honor code will be dealt with in accordance with BI's procedures for cheating. These issues are a serious matter to everyone associated with the programs at BI and are at the heart of the honor code and academic integrity. If you have any questions about your responsibilities under the honor code, please ask.