



Bayesian statistics

Syllabus

Course code:	6382
Number of ECTS credits:	3
Semester:	2nd (February-June)
Recommended components:	Standard knowledge of theory of probability and frequentist inference is required
Language of instruction:	Spanish (students are allowed to ask questions and write homeworks and exams in English)

Course description

This course offers an introduction to Bayesian statistics, and also provides a bridge to access our doctoral program because the student will get knowledges on statistical computing and simulation techniques. Bayesian inference is currently an area of special interest in a lot of applied sciences, from biology, and medicine, to economy and business.

Learning outcomes and competences

After completion of this course you will be able to:

1. Understand the basics of Bayesian inference.
2. Understand the techniques of Bayesian inference and its application to basic parametric models.
3. Apply simulation techniques in Bayesian inference.
4. Know some applications of Bayesian inference in different fields.
5. Know subjective modeling in survival.

Course contents

- I. Introduction to Bayesian statistics.
- II. Estimation for basic parametric models.
- III. Simulation of random variables and Monte Carlo methods for Bayesian inference.
- IV. Introduction to Markov chain Monte Carlo methods.
- V. Applications of Bayesian inference.
- VI. Subjective survival models.

References

1. Berger, J. O. (1985). *Statistical Decision Theory and Bayesian Analysis*. Springer Verlag.
2. Box, G. E. P. and Tiao, G. C. (2001). *Bayesian Inference in Statistical Analysis*. Second ed. Addison-Wesley, Reading, Massachusetts.
3. Spizzichino, F. (2001). *Subjective Probability Models for Lifetimes*. Chapman and Hall/CRC.