

27033 - Regression Methods

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

Students will learn about regression models and their applications. They will be able to use statistical software to estimate the models from real data, and draw conclusions and develop solutions from the estimated models.

General methodological presentation is based on:

- Lectures and problems-solving sessions. Active participation will be encouraged by raising open questions to foster discussion and by proposing short application exercises to be solved in class.
- Practice sessions in computer-room lab. Students will apply the concepts and techniques covered in the lectures to real cases.

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- Seminars to show, by groups, a full analyzed data project.
- Individual or small groups tutorial sessions
- Personal work supported by an e-learning platform, at this moment: Moodle.

5.2.Learning tasks

In-class activities:

- Lectures and Problem-solving sessions.
- Practice sessions in a computer-lab. The main software is the R-package.

Regular attendance is highly recommended for these activities.

Out-class activities:

- Personal study and small-group work for case analysis preparation
- Tutorial sessions at request

5.3.Syllabus

Contents:

Chapter 1 . Simple Linear Regression Model. Assumptions, Estimation of parameters, Inference and Validation of regression models.

Chapter 2. Multiple Linear Regression Model: Estimation, Validation and Inference. Analysis of Variance and Covariance. Strategies for solving assumptions' departures. Introduction to model selection.

Chapter 3. Extending the Linear Model: An introduction to Generalized Linear Models.

5.4.Course planning and calendar

Final and global exams' dates are fixed by the Faculty exams schedule. Other midterm exams or presentations will be fixed according to the ongoing of the course. In this case, we will publish the exact dates by the e-learning platform and in the lecture class.

5.5.Bibliography and recommended resources

- Sheather, Simon. A Modern Approach to Regression with R / Simon Sheather . - 1st ed. New York : Springer, cop. 2006
- Chatterjee, Samprit. Regression analysis by example / Samprit Chatterjee, Ali S. Hadi . - 4th ed. Hoboken (New Jersey) : John Wiley & Sons, cop. 2006
- Dobson, Annette J.. An introduction to generalized linear models / Annette J. Dobson . - 1st ed. London ; New York : Chapman and Hall, 1990

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- Draper, Norman R.. Applied Regression Analysis / N. R. Draper, H. Smith . - 2nd. ed. New York : John Wiley and Sons, cop. 1981
- Jobson, J. D.. Applied multivariate data analysis. vol. I, Regression and experimental design / J. D. Jobson New York [etc.] : Springer, cop. 1991
- Montgomery, Douglas C.. Introduction to linear regression analysis / Douglas C. Montgomery, Elizabeth A. Peck, G. Geoffrey Vining . - 4th ed. Hoboken (New Jersey) : John Wiley & Sons, cop. 2006
- Peña Sánchez de Rivera, Daniel. Regresión y diseño de experimentos / Daniel Peña Madrid : Alianza Editorial, 2002
- R Development Core Team (2010). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.
- Vilar Fernández, Juan Manuel. Modelos estadísticos aplicados / Juan M. Vilar Fernández . 2ª ed. A Coruña : Universidade da Coruña, Servizo de Publicacións, 2006