

Academic Year: (2019 / 2020)

Review date: 27-04-2020

Department assigned to the subject: Statistics Department

Coordinating teacher: D AURIA , BERNARDO

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming in R
Programation advance

OBJECTIVES**** COMPETENCES THAT THE STUDENT ACQUIRES WITH THIS MATTER**

CB06 Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context
CB09 That students know how to communicate their conclusions and the knowledge and ultimate reasons that sustain them to specialized and non-specialized audiences in a clear and unambiguous way
CB10 That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

CG04 Ability to synthesize the conclusions obtained from these analyzes and present them clearly and convincingly in a bilingual environment (Spanish and English) both in writing and orally.
CG06 Apply social skills for teamwork and to relate to others autonomously.
CG07 Apply the advanced techniques of analysis and representation of information, in order to adapt it to real problems.

CE02 Use free software such as R and Python for the implementation of statistical analysis.
CE08 Apply and develop visualization techniques of samples collected with freely distributed software such as R and Python.
CE14 Apply knowledge and advanced statistical consulting skills.

**** LEARNING RESULTS THAT THE STUDENT ACQUIRES**

Acquisition of knowledge on:
1) perspective of the applications and cases of use of statistics nowadays in the business environment;
2) analytical skills needed in a statistical consulting service;
3) the tidyverse environment for the management of databases and creation of graphics;
4) techniques of automatic presentation of statistical results in reports;
5) development of remote data processing servers such as Shiny.

DESCRIPTION OF CONTENTS: PROGRAMME

1) The tidyverse environment for R.
Sorting of databases.
Operations on databases.
Creating charts efficiently via ggplot.

2) Generation of dynamic reports with R.
Markdown language.
R Markdown environment.
Export and distribution of reports.
Creation of presentations.

3) Development of applications with R Shiny.
Design of applications and user interfaces.

Launching applications.
Distribution and hosting.

4) Advanced topics
Dashboard Framework for Python
Git version control system
Web integration (Html, Css, javascript)

LEARNING ACTIVITIES AND METHODOLOGY

** TRAINING ACTIVITIES

AF1 Theoretical class
AF2 Practical classes
AF4 Laboratory
AF5 Tutorials
AF6 Group work
AF7 Individual work

** TRAINING TEACHING METHODOLOGIES

MD1 Frontal lessons with support of computer and audiovisual media, in which the main concepts of the subject are developed. IN addition the bibliography is provided to complement the students' learning.
MD3 Resolution, individually or in group, of practical cases, problems, etc., raised by the teacher
MD5 Individual or in group preparation of papers and reports

ASSESSMENT SYSTEM

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SE1 Participation in class (10%)
SE2 Individual or group work carried out during the course (90%)
SE3 Final exam (0%)

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

BASIC BIBLIOGRAPHY

- Hadley Wickham, Garrett Grolemund R for Data Science, O'Reilly Media, December 2016
- Keon-Woong Moon Learn ggplot2 Using Shiny App (Use R!), Springer, 2016

ADDITIONAL BIBLIOGRAPHY

- Chris Beeley Web Application Development with R Using Shiny, Packt Publishing, 2013
- Winston Chang R Graphics Cookbook: Practical Recipes for Visualizing Data, O'Reilly Media, 2013