

Academic Year/course: 2021/22

## 27621 - Data Analysis and Multivariate Techniques

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 27621 - Data Analysis and Multivariate Techniques

**Faculty / School:** 109 - Facultad de Economía y Empresa

**Degree:** 450 - Degree in Marketing and Market Research

**ECTS:** 6.0

**Year:** 3

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on different teaching methods that favour the acquisition of the competences. A wide range of teaching and learning tasks are implemented, such as expository techniques, which they will be useful for developing the fundamental concepts of the subject. However, and since the subject will be entirely taught in computer rooms, computer tools will be used, alternating theoretical explanations with their application to database analysis, which will facilitate practical learning of the techniques studied. Students are expected to participate actively in the class throughout the semester and the professor will act as a tutor to help them solve the questions from each topic.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum. Further information regarding the course will be provided on the first day of class.

#### 4.2. Learning tasks

This is a 6 ECTS course organized as follows:

- Theoretical-practical classes will be used in order to develop the concepts and developments of each of the topics. In them expository techniques will be used, but motivating participation and discussion in class. The teacher will rely on the computer to illustrate the practical use of the techniques explained by its application to solving real cases using the databases of the subject. In addition, the open software R program will be used to implement the explained techniques.

- Small group tutoring will be used in some optional sessions throughout the course to guide students in the performance of their group works.

- Individual and online scheduled tutoring will be able to be used by students to ask questions about the subject. In the case of students whose tutoring coincides with school hours of other subjects, they can send an email to make an appointment.

The teaching activity is planned to be carried out face to face but, if necessary, they will be carried out online.

#### 4.3. Syllabus

The course will address the following topics:

**Section 1: Introduction to R and R Commander**

Topic 1: Introduction to R

Topic 2: Introduction to R Commander

**Section 2: Initial analysis of a multivariate data set**

Topic 3: One-dimensional exploratory analysis

Topic 4: Two-dimensional exploratory analysis

**Section 3: Data reduction techniques**

Topic 5: Principal Component Analysis

Topic 6: Factor Analysis

**Section 4: Classification techniques**

Topic 7: Cluster Analysis

Topic 8: Discriminant Analysis

**4.4. Course planning and calendar**

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class.