

Academic Year/course: 2021/22

## 27545 - Statistical Analysis for Finance

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 27545 - Análisis estadístico en finanzas

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

**Degree:** 449 - Degree in Finance and Accounting

**ECTS:** 6.0

**Year:** 4

**Semester:** Second semester

**Subject Type:** Optional

**Module:**

### 1. General information

### 2. Learning goals

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

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

#### 4.1. Methodological overview

Different teaching methods will be used depending on the objectives and the skills developed. Thus, expository techniques will be used for the theoretical classes, with the aim of analyzing and developing the fundamental concepts of the subject. However, and given that the subject will be entirely taught in computer rooms, computer tools will be used, alternating theoretical explanations with their application to the analysis of data sets, which will facilitate practical learning of the techniques studied.

The practical classes will be developed with the computer in which each student will apply the statistical techniques explained in the theoretical classes for the analysis of practical cases designed for this purpose. Some of these classes will be used for students to self-evaluate and / or complete their practical works and activities under the auspice of the professor who will act as a tutor to help them solve the difficulties they may have encountered.

As support, the Moodle 2.0 platform will be used, in which the theoretical and practical materials of the subject will be published, as well as all the information necessary for its development, starting with the teaching guide itself.

#### 4.2. Learning tasks

The course includes the following learning tasks:

- Lectures (30h). These sessions will be used to develop mainly the concepts and theoretical developments of each of the topics. Expository techniques will be used, but motivating participation and class discussion. The teacher will lean on the computer to illustrate the practical use of the techniques explained by applying real or simulated series. It is recommended to attend to these sessions because, in our experience, the theoretical part of the subject is the more difficult part to understand and study. The student will have previously published the theoretical development that complements the presentation.
- Computer Practice sessions (30h). This activity will take place in computer rooms. It will be developed through directed exercises in which the students apply the statistical techniques explained in the theoretical classes, using the computer and, more specifically, the R statistical package, which is the one that will be used as the computer

tool.

- Autonomous work (90h)

The teaching delivery methodology is expected to pivot around face-to-face classes. However, if necessary for health reasons, classes may be taught online.

### 4.3. Syllabus

The course will address the following topics:

#### **Block 1: Introduction to R through a basic statistical data analysis**

Topic 1: Introduction to R

Topic 2: Initial exploratory data analysis

#### **Block 2: Multivariate statistical techniques**

Topic 3: Dimension reduction techniques. Principal component analysis. Factorial analysis

Topic 4: Classification techniques. Cluster Analysis. Discriminant Analysis

#### **Block 3: Dynamic analysis of financial series**

Topic 5: Empirical characteristics of a financial series

Topic 6: Statistical modeling of volatility

Topic 7: Statistical techniques for risk assessment and management

### 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 or please refer to the Faculty of Economics and Business website (<https://econz.unizar.es/>) and the Moodle Platform.