# 1. OVERVIEW

| | |
|---|---|
| **Subject area** | Statistics II |
| **Degree** | Bachelor's Degree in Business Analytics |
| **School/Faculty** | Social Sciences and Communication |
| **Year** | 2nd |
| **ECTS** | 6 ECTS |
| **Type** | Compulsory |
| **Language(s)** | Spanish /English |
| **Delivery Mode** | On campus |
| **Semester** | First semester |
| **Year** | 2025/2026 |
| **Coordinating professor** | Gema García |

# 2. INTRODUCTION

Statistics II is a compulsory subject area. Decision-making is crucial in a business. Statistics is a supporting element that can help make decisions at the right level of efficiency by filling information gaps. Decisions in a business need to be made for the common good. Statistics are used as a decision-making tool to achieve this objective. The general aim of this subject area is to teach students the most appropriate methods and techniques for researching and processing data and information on economic and business variables from different national and international databases. This means that, after interpretation, it is possible to make decisions based on objective reasons.

# 3. SKILLS AND LEARNING OUTCOMES

**Basic skills (CB, by the acronym in Spanish):**

- CB1 - Students have shown their knowledge and understanding of a study area that builds on general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.

**Specific skills (CE, by the acronym in Spanish):**

- CE10 - Ability to analyse, integrate and evaluate information from the economic environment, which is necessary for decision-making.
- CE14 - Knowledge of the statistical and econometric tools used for the analysis of economic and business variables.
- CE16 - Ability to use the mathematical tools necessary for solving economic problems and using basic methods of calculation, algebra and programming.
- CE26 - Critical thinking and objectivity to question data and truths assumed on the basis of preceding data.
- CE33 - Ability to handle computer tools for statistical processing and other tools such as simulators with ease and technical solvency.

**Learning outcomes (RA, by the acronym in Spanish):**

- RA 1. Researching and processing information on economic and financial variables from different national and international databases.
- RA 2. Carrying out descriptive analyses of data and reports on economic and business realities.

The following table shows how the skills developed in the subject area relate to the intended learning outcomes:

| Skills | Learning outcomes (RA, by the acronym in Spanish) |
|---|---|
| CB1: CE10, CE26 | RA1: Processing discrete and continuous random variables for the modelling of economic and financial variables. |
| CB1, CE14, CE16, CE26, CE33 | RA2: Carrying out reports on economic and business realities through the use of statistical inference tools. |

# 4. CONTENTS.

The subject is divided into 12 topics with theoretical and practical content.

**Unit 1: Probability theory: Assessment of the degree of uncertainty.**

• 1.1. Introduction. Basic concepts.

• 1.2. Random events

• 1.3. Probability

**Unit 2: Discrete variables and their characteristics.**

**Unit 3: Discrete probability models**

• 3.1. Discrete uniform distribution.

• 3.2. Bernoulli distribution. Discrete binomial distribution.
• 3.3. Hypergeometric.

• 3.4. Poisson distribution.

**Unit 4: Continuous variables and their characteristics.**

**Unit 5: Continuous probability models** •

5.1. Continuous uniform distribution.

• 5.2. Exponential distribution.

• 5.3. Normal distribution.

• 5.4. Student's t-distribution.

• 5.5. Pearson's chi-squared test.

• Fisher-Snedecor's F-distribution.

**Unit 6: Bidimensional. Simple linear regression**

**Unit 7: Inference Theory. Estimators**

• 7.1. Elementary sampling theory.

• 7.2. Statistics and their distribution.

• 7.3. Point estimation of parameters.

**Unit 8: Estimators**

• 8.1. Properties of estimators

• 8.2. Estimation methods

**Unit 9: Estimation. Confidence intervals**

**Unit 10: Parametric hypothesis testing**

• 10.1. Hypothesis testing for a population mean using a normal distribution.

• 10.2. Proportion testing.

• 10.3. Test for a normal population variance.

• 10.4. Hypothesis testing for two populations.

**Unit 11: Non-parametric hypothesis testing**

• Goodness of fit

## 5. TEACHING-LEARNING METHODS

The types of teaching-learning methods are as follows:

- Lecture.
- Collaborative learning.
- Problem-based learning

## 6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

| Learning activity | Number of hours |
|---|---|
| Lectures | 29 |
| Asynchronous lectures | 12 |
| Problem-solving | 25 |
| Oral presentations | 5 |
| Writing reports and papers | 30 |
| Independent working | 35 |
| Tutorials | 10 |
| Knowledge tests | 4 |
| **TOTAL** | **150** |

# 7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

| Assessment system | Weighting |
|---|---|
| Knowledge test | 50% |
| Case studies/Problem scenarios | 40% |
| Written reports and oral presentations | 10% |

On the Virtual Campus, when you open the subject area, you can see all the details of your assessable tasks and the deadlines and assessment procedures for each task.

## 7.1. Ordinary exam period

To pass the subject area in the ordinary exam period you must obtain a grade higher than or equal to 5.0 out of 10.0 in the final grade (weighted average) for the subject area.

All tasks must be submitted on the date specified and a grade higher than or equal to 5.0 must be obtained in each task.

It is necessary that you obtain a grade higher than or equal to 5.0 in the on-campus knowledge test, so that it can be averaged with the rest of the activities.

## 7.2. Extraordinary exam period (resits)

To pass the subject area in the ordinary exam period you must obtain a grade higher than or equal to 5.0 out of 10.0 in the final grade (weighted average) for the subject area.

In any case, it is necessary to obtain a grade higher than or equal to 5.0 in the on-campus knowledge test final extraordinary exam, so that it can be averaged with the rest of the tasks.

Students must submit all tasks applicable to the ordinary exam period and obtain a grade of at least 5.0.

Any student who passes the exam in the ordinary exam period but does not submit the tasks, or receives a grade lower than 5.0, must resit the exam in the extraordinary exam period, and also submit the tasks.

# 8. TIMELINE

The timeline with delivery dates of assessable tasks in the subject area is indicated in this section:

| Assessable tasks | Date |
|---|---|
| **Activity 1.** Probability Work | Week 4 |
| **Activity 2.** Probability knowledge test | Week 4 |
| **Activity 3.** Knowledge test | Week 12 |
| **Activity 4.** Case resolution | Week 15 |
| **Activity 5.** Knowledge test | Week17 |

The timeline may be subject to modifications for logistical reasons. Students will be informed of any changes in due time and course.

## 9. BIBLIOGRAPHY


- Javier Gorgas, Nicolás Cardiel y Jaime Zamorano. (2011). Estadística básica para estudiantes de ciencias. Facultad de Ciencias Físicas Universidad Complutense de Madrid.
- Jose M. Casas, Julián Santos. (2007). Introducción a la estadística para Administración y dirección de empresas. Editorial Centro de estudios Ramón Areces, S. A. Madrid.
- Martín, F.J. (2004): "Introducción a la Estadística Económica y Empresarial (teoría y práctica)" (3ªed.). Ed. Thomson-Paraninfo.
- Moreno Rebollo, Juan Luis y Pascual Acosta, Antonio (2006): Experto en Estadística Pública
- Newbold, P., Carlson, W.L, y Thorne, B. (2015): Statistics for Business and Economics: Global Edition. Prentice Hall.
- Vicente Quesada, Paloma y García, Alfonso (1998): Lecciones de cálculo de probabilidades. Ediciones Díaz de Santos.


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## 10. DIVERSITY AWARENESS UNIT

Students with special educational needs:

To ensure equal opportunities, curricular adaptations or adjustments for students with special educational needs will be outlined by the Diversity Awareness Unit (UAD, Spanish acronym).

As an essential requirement, students with special educational needs must obtain a report about the curricular adaptations/adjustments from the Diversity Awareness Unit by contacting unidad.diversidad@universidadeuropea.es at the beginning of each semester.

## 11. STUDENT SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, the degree and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the degree.

Many thanks for taking part.