



Statistics I

Grado en Economía  
y Negocios  
Internacionales



UNIVERSIDAD  
NEBRIJA

## SYLLABUS

**Course:** Statistics I

**Degree:** Grado en Economía y Negocios Internacionales

**Type:** Core

**Languages:** This course will be taught in English

**Modality:** In-Person

**Credits:** 6

**Year:** 1st

**Semester:** Fall Semester

**Professors and contact information:** Elena Ortiz ([eortizte@nebrija.es](mailto:eortizte@nebrija.es))

### 1. COMPETENCES AND LEARNING OUTCOMES

#### 1.1. Competencies

##### Basic competencies

BC1: Students will have demonstrated possession and understanding of knowledge in a discipline that builds on general secondary education and is typically found at a level that, while supported by advanced textbooks, also includes aspects involving learning from the cutting-edge knowledge for their field of study.

BC2: Students will know how to apply their knowledge to their work in a professional manner and possess the competencies usually demonstrated through the development and defense of their arguments and problem-solving within their field of study.

BC3: Students will have the ability to gather and interpret relevant data (usually within their field of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

BC4: Students will be able to convey information, ideas, problems, and solutions to both specialized and non-specialized audiences.

BC5: Students will have developed the learning skills necessary to undertake further studies with a high level of autonomy.

##### General competencies

GC6: Identify relevant elements for decision-making.

GC8: Apply their knowledge to real life situations, obtaining results that will help them to problem-solve, specifically in the field of economics and international business.

##### Specific competencies

SC1: Identify sources of relevant economic information and their content.

SC9: Apply appropriate quantitative methods to the available data.

SC17: Develop the ability to write technical reports based on the efficient use of computer programs and/or databases for problem-solving.

SC18: Understand and handle quantitative methods used as analytical tools for economic and international business.

## 1.2. Learning outcomes

By the end of this course, the student should be able to:

- Know how to use different techniques for data collection, compilation, and analysis.
- Be able to manage and organize information.
- Utilize quantitative techniques for data analysis and economic variables.

## 2. CONTENTS

### 2.1. Prerequisites

None.

### 2.2. Description

Basic statistical concepts and methods will be taught in a way that emphasizes an understanding of the principles of data collection and analysis. Much of the course will be devoted to discussions on how statistics is commonly used in the real world.

There are two parts:

I. Data – which includes graphical and numerical summaries to describe the distribution of a variable, or the relationship between two variables, and data analysis to learn how to design good surveys and experiments, and the collection of data from samples that are representative of the whole population, and to avoid common sources of bias.

II. Probability and Inference – using the language of probability and the properties of numerical summaries computed from a random sample, we learn to draw conclusions about the population of interest, and to attach a measure of reliability to them.

### 2.3. Covered Topics

#### 1. INTRODUCTION

- Statistics. Classification.
- Fractions, ratios and percentages (review).
- Individuals, population (universe), and sample.
- Variables and attributes.
- Stages of statistical analysis.

#### 2. DATA COLLECTION

- Key concepts.
- Sampling methods: probabilistic and non-probabilistic. Other sampling techniques.
- Data sources: primary and secondary.

3. TECHNICAL RECORD
  - Interpretation.
4. GRAPHICAL REPRESENTATIONS AND FREQUENCY DISTRIBUTIONS
  - Frequency distributions of variables and attributes. Graphical representation.
  - Measures of position, dispersion, and central trend.
  - Concentration measures: Gini Index and Lorenz Curve.
  - One-dimensional analysis of variables (exercises).
5. INDEXES
  - Classification. Simple and composite indexes.
  - Deflation of economic series.
6. BIDIMENSIONAL VARIABLES
  - Bidimensional frequency distributions.
  - Marginal distributions.
  - Conditional distributions.
  - Linear correlation and independence.
7. GAUSSIAN AND LAPLACE DISTRIBUTIONS
  - Normal distribution. Distribution function and properties.
  - Use of the normal distribution table.
8. STATISTICAL INFERENCE: ESTIMATION
  - Introduction.
  - Point estimation.
  - Confidence intervals for the mean with known and unknown population variance.
  - Confidence intervals for proportions.
  - Sampling in finite populations.
  - Confidence level. Sampling error. Determination of sample size.
9. STATISTICAL INFERENCE: HYPOTHESIS TESTING
  - Introduction.
  - Consequences of the decision on a hypothesis.
  - Parametric hypothesis testing.

#### 2.4. Individual / Group Assignments

During the course, individual or group assignments or related projects will form part of the student's assessment.

Guided activity: team work based on the practical application of the statistical concepts seen throughout the course. For this purpose, real data from companies or countries will be used to conduct economic analysis accordingly.

## 2.5. Learning Activities

<b>LEARNING ACTIVITIES</b>		
<b>In-Person Learning</b>		
A1 Lectures	<b>45</b>	<b>100%</b>
A2 Discussion Sections	<b>9</b>	<b>100%</b>
A3 Mentoring	<b>9</b>	<b>100%</b>
A4 Individual / Group Assignments	<b>18</b>	<b>0%</b>
A5 Online Assignments	<b>6</b>	<b>50%</b>
A6 Extracurricular Materials	<b>6</b>	<b>0%</b>
A7 Self Study	<b>51</b>	<b>0%</b>
A13 Exam	<b>6</b>	<b>100%</b>
<b>Online Learning</b>		
A9 Asynchronous Classes	<b>12</b>	<b>0%</b>
A10 Discussion Sections, Synchronous or Asynchronous	<b>12</b>	<b>0%</b>
A3 Mentoring	<b>24</b>	<b>0%</b>
A4 Individual / Group Assignments	<b>18</b>	<b>0%</b>
A5 Online Assignments	<b>12</b>	<b>0%</b>
A6 Extracurricular Materials	<b>12</b>	<b>0%</b>
A7 Self Study	<b>54</b>	<b>0%</b>
A13 Exam	<b>6</b>	<b>100%</b>

**Methodologies:**

**In-Person:** MD1, MD2, MD3, MD4, MD5

**Online:** MD1, MD2, MD3, MD4, MD5

## GRADING RUBRICS

### 2.5. Grades

Grades are calculated as follows:

- 0 - 4.9 Fail (SS)
- 5.0 - 6.9 Pass (AP)
- 7.0 - 8.9 Notable (NT)
- 9.0 - 10 Outstanding (SB)

The mention of "Matrícula de Honor" may be awarded to students who have obtained a grade equal to or greater than 9.0.

## 2.6. Evaluation criteria

### Ordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S1 Attendance and Participation	10%
S2 Individual / Group Assignments	30%
S3 Midterm Exam (On-Site)	10%
S4 Final Exam (On-Site)	50%

### Extraordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	70%

## 2.7. Restrictions

### Minimum Grade

To be able to qualify for inclusion of the above evaluation criteria percentages in the calculation of the final grade, it is necessary to obtain at least a grade of 5.0 in the final test.

### Attendance

Student who have missed more than 25% class meetings (unexcused) may be denied the right to take the final exam in the ordinary session.

### Writing Standards

Special attention will be given to written assignments, as well as to exams, regarding both presentation and content in terms of grammatical and spelling aspects. Failure to meet the minimum acceptable standards may result in point deduction.

## 2.8. Plagiarism Warning

Nebrija University will not tolerate plagiarism under any circumstances. Reproducing content from sources other than a student's own work (the internet, books, articles, and peers' work, among others) without proper citation will be considered plagiarism.

If these practices are detected, they will be considered a serious offense, and the sanctions provided for in the Student Regulations may be applied.

### 3. BIBLIOGRAPHY

#### Required Reading:

- AGRESTI, A.; FRANKLIN, C.A.; KLINGENBERG, B. (2023). *Statistics. The art and science of learning from data* (5th Edition). Pearson.
- NEWBOLD, P.; CARLSON, W. L.; THORNE, B.M. (2023). *Statistics for Business and Economics* (10th Edition). Pearson.

#### Recommended Reading:

- LIND, D.; MARCHAL, W.; WATHEN, S. (2012). *Basic Statistics for Business and Economics*. McGraw Hill.
- ROOS, S. (2010). *Introductory Statistics* (3th Edition). Reverté.