

A large, light gray, stylized profile of a man with a cap and curly hair, facing right, serves as a background for the upper half of the page.

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: Santiago Budría, Ainhoa Ercoreca and Saturnino Mendoza.

1. COMPETENCIES AND LEARNING OUTCOMES

1.1. Competencies

Basic competencies

CB1; CB2; CB3; CB4; CB5

General competencies

CG6; CG8

Specific competencies

CE1; CE9; CE17; CE18

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.
 - Designing surveys.
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. BIDIMENSIONAL VARIABLES
 - Bidimensional frequency distributions.
 - Marginal distributions.
 - Conditional distributions.
 - Linear correlation and independence.
6. GAUSSIAN AND LAPLACE DISTRIBUTIONS
 - Normal distribution. Distribution function and properties.
 - Use of the normal distribution table.
7. 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.

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, primary or secondary data will be used to conduct economic analysis accordingly.

2.5. Learning Activities

In-Person Learning	Hours	Attendance %
AF1 Lecture / Theoretical Foundations	45	100%
AF2 Case Studies	9	100%
AF3 Tutorial	9	100%
AF4 Individual / Group Assignments	18	0%
AF5 Online Assignments	6	50%
AF6 Extracurricular Materials	6	0%
AF7 Self Study	57	0%

Online Learning	Hours	Attendance %
AF8 Online Lecture	12	50%
AF9 Online Case Studies	12	0%
AF5 Online Assignments	48	0%
AF6 Extracurricular Materials	18	0%
AF7 Self Study	24	0%
AF10 Online Tutorial	12	100%
AF11 Individual / Group Assignments	24	50%

Methodologies:

In-Person: MD1, MD2, MD3, MD4

Online: MD1, MD2, MD3, MD4

3. GRADING RUBRICS

3.1. 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.

3.2. 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%

Modality: Online

Evaluation Criteria	Percentage
S10 Participation (Forums and Supervised Activities)	10%
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	60%

Extraordinary Session

Modality: In-Person

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

Modality: Online

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

3.3. 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.

3.4. 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.

4. 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.
- Jarrett, C. (2021). *Surveys that Work. A Practical Guide for Designing and Running Better Surveys*. Rosenfeld.
- Roos, S. (2010). *Introductory Statistics* (3th Edition). Reverté.