esade

TEACHING GUIDE - 2025-2026

Statistics

UGRA_009384

Departments	Data, Analytics, Technology and Artificial Intelligence (DATA), Dept. of Operations, Innovation & Data Sciences
Teaching Languages	English
ECTS	6
Teacher responsible	Tiago Belles Horta Francisco - tiagobelles.horta1@esade.edu
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Course Goals

Upon completing this course students should be able to:

- Use statistical reasoning for its practical applications.
- Distinguish the different branches of Statistics, their concepts and techniques to be able to use them in the appropriate situations.
- Relate the course to other courses being studied and their future professional career.
- Summarise the information provided by a set of data using descriptive, univariate and bivariate statistical techniques.
- Prepare descriptive statistical reports.
- Use probabilities calculation and probability models to make decisions.
- Apply the techniques learnt in an ethical manner.

Previous knowledge

Concepts of real function, continuity and derivability and their applications.
Concept of definite integral and calculating primitives of elementary functions.

Prerequisits

To take this course, students should have taken first the course Mathematics Applied to Economic Analysis.

Teaching methodology

The course combines lectures and participatory sessions:

- Lectures: In these classes, faculty will combine theoretical explanations with examples. Lecture classes might include tests. Students' marks on these will be taken into account to determine their overall marks for the subject.

- Participatory sessions: In these classes, students will be asked to complete exercises by themselves. Some of these exercises will focus on preliminary concepts, while others will be dedicated to resolve more advanced

problems, both related to the previous lecture class. These exercises might be handed in at the end of class.

Description

Course contribution to program

Statistics is an essential tool for decision-making in environments where the amount of data and/or level of uncertainty do not allow the information contained to be extracted directly. This course provides some of the theoretical and practical foundations needed for decision-making in the face of uncertainty.

Short description

This course introduces the fundamental concepts and techniques of descriptive statistics and probability theory. Students will learn to summarize and interpret data using measures of central tendency, dispersion, and graphical representations. The course covers the basics of probability, including probability distributions, expected values, and the laws of probability. Practical applications and real-world examples will be used to illustrate how these statistical methods and probabilistic models are applied in various fields. By the end of the course, students will be equipped with the skills to analyze data and make informed decisions based on statistical reasoning.

Program Learning Objectives

GEL23-Bachelor of Global Governance, Economics and Legal Order

- Critical and Analytical Thinking
  - Apply relevant techniques and tools to analyze and evaluate economic and financial information.
  - Apply relevant data analysis techniques and tools in the context of social science.

Bibliography

Paul Newbold, William L. Carlson, Betty M. Thorne, Statistics for Business and Economics, Global Edition, Pearson, 9781292315034 (Book)

Activities

Quizzes/tests
Regular tests to assess students' performance.

Practical exercises with professional software
Practical exercises with Excel.

Content

#	Topic
1	Descriptive Statistics: introduction; frequency distribution: tables and charts; frequency distribution: numerical measures
2	Probability: introduction to probability: random experiments; definition of probability; conditional probability & independence; probability trees: total probabilities and Bayes' theorem
3	Discrete Random Variables: introduction to discrete random variables; discrete models: Bernoulli, Binomial, Hypergeometric, Geometric, Poisson; two-dimensional discrete random variables
4	Continuous Random Variables: introduction to continuous random variable; continuous models: Uniform, Exponential, Normal; Central Limit Theorem; two-dimensional continuous random variables

Assessment

Tool	Assessment tool	Category	Weight %
Other	Class participation	Retake and ordinary round	10.00%
Quizzes/tests	Tests	Retake and ordinary round	25.00%
Written and/or oral exams	Exam Units 1&2	Ordinary round	30.00%
Written and/or oral exams	Exam Units 3&4	Ordinary round	35.00%
Written and/or oral exams	Retake exam	Retake	65.00%

PROGRAMS

G114S-Global Governance Exchange Program (Undergraduates: Law)
G114S Year 1 (Optative)

GDL20-Double Degree in Law and Global Governance, Economics and Legal Order (Undergraduates: Law)
GDL20 Year 3 (Optative)

GDL23-Double Degree in Law and Global Governance, Economics and Legal Order (Undergraduates: Law)
GDL23 Year 3 (Optative)

GEL19-Bachelor of Global Governance, Economics and Legal Order (Undergraduates: Law)
GEL19 Year 2 (Optative)

GEL23-Bachelor of Global Governance, Economics and Legal Order (Undergraduates: Law)
GEL23 Year 2 (Optative)