EAE Business School

We make it happen

Syllabus

- **Course:** Fundamentals of Statistics
- **Cerdits:** 6 ECTS
- **Program:** ADE
- **Module:** Statistics
- **Subject:** Basic subject
- **Code:** 802315
- **Abbreviation:** SDI
- **Subject Coordinator:** PhD. Joaquín Azcue
- **Academic year:** 2022-2023
- **Session:** Spring
- **Semester:** Firts (2nd, fall Semester)
- **Campus:** Barcelona
- **Last Review:** 04/04/2022
- **Approved:** 04/04/2022
- **Published:** 30/04/2022

00 Table of Contents

01 Faculty

01.1 Subject Coordinator

PhD. Joaquín Azcue

(jazcue@eae.es)

02 Presentation

02.1 Description

Statistics I is a basic core subject taught in the first semester of second year in the Business Administration and Management Degree. This component of the degree aims to academically inform future managers and directors so as they may be able to contribute via skilled management praxis to the economic and social development of companies. Statistics in understood to be an essential subject for the analysis of numerical data.

This subject will introduce students to the basic concepts of descriptive statistics and probability, which will form the basis for both the study of inferential or inductive statistics versing them in the knowledge required to undertake Statistics II, and other subjects such as Financial Mathematics, Microeconomics, Macroeconomics or Commercial management. This subject will give students the basic skills needed to understand subjects in which random phenomena play an important role.

The subject is divided into two fundamental parts: descriptive and probability. Students will learn the descriptive analysis of variables and statistical data, both one-dimensional and multidimensional. Regression techniques will be explained and topics of special interest in the field of economics will be explored. The objective of studying probability theory is to provide the student with instruments that make it possible to work in an environment of uncertainty. Student will acquire knowledge about the theory of probability and models, both one-dimensional and multidimensional.

02.2 Relevant professional applications

The student will be made aware that Statistics does not represent a subject in itself but should be instead understood as a tool to be employed later in other fields (quality control, market studies, etc.) a tool with which they will be able to analyse different cases and make informed professional decisions.

03 Competences

03.1 Subject Competences

Specific Competences

CEEST1. Students will be familiar with the basic terminology and key concepts of descriptive, mathematical and inferential statistics.

CEEST2. Students will learn data extraction procedures and analysis of information.

CEEST3. Students will be aware of and understand the concepts and basic elements that describe random phenomena and probability models.

CEEST4. Students will understand the know necessity of samples, and the conditions for its effectiveness.

CEEST5. Students will know and understand the construction procedures of estimators and learn to make estimates and test hypotheses from a given sample.

CEEST6. Students will be able to apply statistical methods and techniques in exercises and problems to help understand fundamental statistical concepts and procedures and where necessary use computer programs to resolve them.

CEEST7. Students will be able to apply methods and statistical techniques to analyse business data, investigating relationships, and identifying implications and consequences in order to draw conclusions

General Competences

GG12- Student will show a strong command of user level Information and Communication Technologies (ICT) in all professional activity.

CG18- Students will show an ability to apply advanced technical tools and techniques to the analysis and resolution of professional problems.

Basic Competences

GB1- Students will demonstrate knowledge of their area of study which is based in, and yet surpasses, general secondary school education. While knowledge will be acquired primarily via advanced textbooks, students will also demonstrate aspects that imply vanguard knowledge of their field of study.

GB3- Students will demonstrate the ability to gather and interpret relevant data (usually within their area of study) and contribute an informed opinion which includes reflections on relevant social, scientific or ethical issues.

04 Program

1. Preliminary concepts
2. Creation of databases
3. Graphic representations
4. Measures of central tendency: arithmetic mean, geometric mean, weighted mean and median.
5. Measures of dispersion: range, variance and standard deviation
6. Position measurements: quartiles (Q1, Q2, Q3) and percentiles
7. Generic discrete distributions: calculation function of probability, hope and variance
8. Known discrete distributions: Bernoulli, Binomial and Poisson
9. Generic continuous distributions: calculation function of density, hope and variance
10. Known continuous distributions: Normal Law, t-student and F-Snedeccor

11. Estimation and Inference: Confidence Intervals
12. Hypothesis Testing
13. Application of Corporate Social Responsibility in the business management to ensure a better sustainable community and continuity in the awareness of its importance.

05 Teaching Method

Considering the characteristics of the subject, both theoretical and practical; and the profile of the students, the learning design of the subject has been articulated around three groups of methodologies:

ME1. Interactive class presentations

ME3. Independent work

ME4. Case study/problem solving based learning

06 Learning Activities

The following learning activities are undertaken in line with competencies stipulated for this subject and consistent with the teaching methodologies proposed:

Evaluation activities	Hours	On-site delivery
AF1. Content exposition with student participation	24	100%
AF2. Problem solving exercises and case studies with student participation	24	100%
AF4. Study and preparation of teaching units	44	0%
AF5. Completion of exercises and case studies	25	0%
AF6. Systematic resolution of problems	25	0%
AF13. Written / oral evaluations	8	100%

07 Assessment

Assessment Item	Assessed Specific skills	Weight
EV1. Final written exam on the entirety of the subject studied	CEEST1, CEEST2, CEEST3, CEEST4, CEEST5, CEEST7	40%
EV2. Mid-term written test	CEEST1, CEEST2, CEEST3, CEEST4, CEEST5, CEEST7	20%
EV3. Exercises, problems, reporting, homework - Exercices and problems - Statistical report of a business case	CEEST6, CEEST7	40%

"The maximum grade that students will be able to obtain in the revaluation tests [...] shall be 5,0. In addition, "the grade of the revaluation tests shall in any case constitute the final grade of the subject". Thus, **only students who, having completed the midterm exam, the final exam and having carried out 100% of the continuous evaluation activities of the subject**, and have suspended (final grade of the subject below 5) will be entitled to the revaluation examination.

08 Learning Resources

Subjects	Resources	Type
Units 1 - 5	Class Slides, notes and exercises	Class and Blackboard

09 Code of Academic Conduct

The section 27.2 of the Universal Declaration of Human Rights stipulates that everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

Thus, the moral and patrimonial rights of the authors of literary, musical, artistic, scientific and academic creations, whether they have been published or not, are protected by means of different national and international regulations. In the case of Spain, the Legislative Royal Decree 1/1996, of April the 12th, approved the consolidated version of the Law of Intellectual Property, regularizing, clarifying and harmonizing the legal provisions for the time being in force on this matter.

In this respect, special attention must be given to previously obtaining the corresponding authorization from the owner of the copyrights of any material, particularly before its distribution to the students and by means of the virtual campus. EAE Barcelona takes no responsibility for the non-compliance with this rule on the part of the users, either members of the teaching community or students.

The following materials that can be duplicated without the requirement of previous authorization:

- Laws and regulations.
- Court decisions.
- Acts, agreements, deliberations and decisions from public bodies.
- Any material distributed under the Creative Commons license, whenever its author and credits are mentioned.
- Any material published under the ISBN of EAE Barcelona or EAE Madrid.
- Any material, whose rights belong to EAE Barcelona or EAE Madrid.
- Any work that is in the public domain.

Furthermore, the quotation right is the inclusion of extracts from protected documents or materials, in this particular case, elaborated by the members of the teaching community- with the exception of textbooks and university handbooks- when such extracts are used to accompany educational activities.

The excerpts that can be used on the basis of the quotation right must fulfil the following requirements

- They must be previously published works.
- The source and author must be mentioned, whenever it is possible.
- They must deal exclusively with the teaching field.
- The inclusion of the excerpt must necessarily come with an analysis or explanation of it.

Concerning the material elaborated by the professors, in case it has been published previously, the agreements with the magazine or publication where it appeared must be considered.

As is apparent from the preceding paragraphs, plagiarism is a fraudulent activity that may result in serious sanctions, both of academic and legal nature. Academic honesty is one of the pillars on which the School's commitment to education is based, and the members of its teaching community are particularly conscious and prepared to perceive this kind of actions. Keeping in mind the difficulty that arises when trying to conceptualize plagiarism, it has been considered appropriate to delimitate clearly its contents and significance in these regulations and policies.

Plagiarism is understood as the appropriation of someone else's works, pretending that they are one's own; that is to say, without explicitly confirming its source. Plagiarism can consist on the complete or partial unauthorized copy of someone else's work, or the presentation of a copy as an original own work, impersonating the true author. Some examples of plagiarism are:

- Presenting someone else's work as one's own, regardless of whether the copy is complete or partial.
- Paraphrasing a text using different words, with small changes in the language, without quoting the source in order to feign.
- Purchasing or obtaining a work and presenting it as one's own.
- Using someone else's ideas or sentences as the basis to write a work without quoting its author.

In line with the section 10 of the Academic Code of Conduct of Students of EAE Barcelona, without prejudice to the academic sanctions resulting from its application, the Academic Commission will promote the pertinent legal actions if the plagiarism violates the applicable regulation in matters of intellectual property.

10 Bibliography

10.1 Basic Bibliography

- Anderson D., Sweeney D., Williams T., *Estadística para administración y economía* – 11ª edición, Editorial Cengage Learning (2021). ISBN 10: 9686034102 / ISBN 13: 9789686034103

10.2 Recomendad Bibliography

- Casas J.M., Cortiñas P.,Zamora, A.I. *Estadística y economía empresarial.* Editorial Ramón Areces (2011). ISBN: 978-84-9961-005-4.
- Hogg R., McKean J., Allen T.Late, C., *Introduction to Mathematical Statistics*, Global Edition, 8th Edition, Editorial: Pearson (2021). ISBN-10: 0134173058 /ISBN-13: 978-0134173054.
- Levine, D., Stephane D., Szabat, K.A. *Statistics for Managers using Microsoft Excel* - 8th Edition. Editorial: Preston (2018). ISBN-10: 0134173058 / ISBN-13: 978-0134173054.