UAB
Universitat Autònoma de Barcelona

Basic Statistics

Code: 104790
ECTS Credits: 6

2025/2026

Degree	Type	Year
Communication in Organisations	OB	3

Contact

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

The course has no prerequisites.

Objectives and Contextualisation

The aim of the course is to provide an understanding of the fundamental principles of descriptive statistics and statistical inference, as well as to provide students with the ability to evaluate the veracity of statements made from statistical data, and to provide them with sufficient skills to make statistical inferences about a population from sample data.

At the end of the course, students should be able to:

- Use information from databases with the help of a computer.
- Present the relevant information contained in a file in a synthetic and easily understandable form, using the relevant statistical techniques of data analysis and graphical representation.
- Critically evaluate statements made on the basis of data analysis.
- Understand the basic concepts of statistical inference based on probability theory.
- Be able to construct and interpret confidence intervals and to perform and interpret hypothesis tests.

Competences

- Apply specific research methodologies to formulate hypotheses, validate and verify ideas and concepts and interpret data on communication in organisations.
- Manage time efficiently and plan for short-, medium- and long-term tasks.
- Search for, select and rank any type of source and document that is useful for creating messages.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.

Learning Outcomes

1. Apply the basic principles of audience measurement to the analysis of specific cases, using the most suitable statistical tools to correctly plan corporate communication.
2. Find what is substantial and relevant in documents within the subject.
3. Know all the criteria for selecting the data that will be subsequently processed in order to reach sound conclusions.
4. Submit high-quality coursework on time, which requires attention to both individual and group work.
5. Use data management systems.
6. Use the tools and models of statistical analysis.
7. Work independently , on the basis of the knowledge acquired, to resolve the exercises set and interpret the data.

Content

Block I. Descriptive analysis and introduction to statistical inference

Topic 1. Descriptive statistics with one variable

1.1. Definition: descriptive and inferential statistics

1.2. Fundamentals of univariate descriptive statistics

The concept of measurement and levels of measurement

Observations and variables

Elementary mathematical notation: the summation ($\sum$)

1.3. Basic concepts of proportions. The concept of increment

Calculation and interpretation of a percentage

Operations with proportions

Percentage changes: the increase

Index numbers

1.4. Frequency distribution tables and their graphical distribution

Individual data and data grouped in intervals

Absolute, relative and cumulative frequency

Bar and pie charts

1.5. Summary measures of the distribution of a variable

Measures of central tendency: mode, median and mean

Position measures: percentiles

Measures of dispersion: range, variance, standard deviation, interquartile range

Graphical representations: histograms and box plots

Topic 2. Bivariate descriptive analysis

2.1. Contingency table analysis

Joint, marginal and conditional distributions

The contingency table as a tool for analysing the relationship between variables.

The stacked bar charts

2.2. Comparison of means

Descriptive statistics according to groups

Clustered box plots

2.3. Correlation between variables and the regression line

Concepts and calculations in correlation

Concepts and calculation of the regression line

Scatterplots

Topic 3. Fundamentals of Statistical Inference

3.1. Statistical sampling

The concepts of sample and population

Probability and non-probability sampling

Sampling error and interval estimates

3.2. Introduction to Hypothesis Testing

Types of test error: the confidence level and the significance level

Contingency tables and the chi-square test

Comparison of means. Analysis of variance

Inference in simple linear regression models.

Block II. The Excel spreadsheet and its applicability to statistics. Other programmes

Topic 4. Introduction to the spreadsheet and its use in descriptive statistics

4.1. Data preparation and basic functions of the spreadsheet

4.2. Univariate and bivariate descriptive statistics from the spreadsheet

Working with aggregated data

Working with individual data: pivot tables

The possibilities of the spreadsheet in graphical representations

4.3. The spreadsheet and statistical inference

The chi-square and Cramer's V test

The calculation of homoscedasticity in the comparison of means. Comparison of means and analysis of variance.

Correlation and linear regression.

Topic 5. Introduction to interactive visualization with PowerBI

Note: The course content will be sensitive to issues related to gender perspective and the use of inclusive language.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory practical	20	0.8	
Masterclasses	15	0.6	
Problem solving classes/case studies/exercises	13	0.52	
Type: Supervised			
Tutorials	12	0.48	
Work/report writing	40	1.6	
Type: Autonomous			
Personal study	50	2	

From a methodological point of view, the course is divided into three parts. The theoretical content, which will be taught in lectures, the problems in the classroom, and the practical computer work, which will be carried out in smaller groups in classrooms equipped with PCs. As for the time spent on each activity, approximately 30% will be devoted to lectures, 30% to problem solving, and 40% to practical computer work.

Theoretical content and problem solving

Theoretical and problem-solving classes will be held simultaneously. In these, the content of the programme will be presented, statistical procedures will be introduced, and statistical problems will be carried out in the classroom. These sessions will be coordinated with the knowledge that will simultaneously progress in the practical sessions. For the proper functioning of the course, some exceptions may be made to this general rule.

The eminently magisterial nature of the theoretical classes will be accompanied by the practical support of problem solving. These problems will take the form of specific cases relating to the different statistical procedures used, always applied to the framework of communication in organisations or to communication in general. Students will be expected to solve the problems individually, followed by a collective discussion.

Practical computer work

These classes will be taught directly in a room equipped with computers. Students will receive advanced training in the use and application of spreadsheets to solve specific problems in the field of research in the world of communication using the computer. In addition, basic information on statistical programmes will be provided. It will be eminently practical in nature, so that all sessions will combine a brief explanation of procedures to help solve a set of practical problems. Examples and databases will be specific to the world of communication.

The detailed calendar withthe content of the different sessions will be presented on the day of the subject's introduction and will also be available on the Virtual Campus of the subject, where students will find various

teaching materials and all the necessary information for the proper follow-up of the subject. In case of a change in teaching modality for reasons of force majeure according to the competent authorities, the teaching staff will inform about the changes that will occur in the programming of the subject and in the teaching methodologies.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Classroom practice	15%	0	0	1, 3, 4, 7, 2, 5, 6
Internships	15%	0	0	1, 3, 4, 7, 2, 5, 6
Submission of papers	30%	0	0	1, 3, 4, 7, 2, 5, 6
Theoretical tests	40%	0	0	1, 3, 2

The acquisition of knowledge will be assessed on the basis of the daily monitoring of the theoretical and practical sessions (30%), an individual written test (40%), and a data analysis project to be carried out in groups (30%). In order to pass the course, a minimum mark of 4 will be required in each of the tests, and the weighted average must be higher than 5.

Follow-up of the theory and problem sessions (15%). Achievements in the contents of the theoretical part and problems will be evaluated on a daily basis. This monitoring can be carried out in two different ways: (a) by means of tests with specific questions on the contents taught in the session; or (b) by means of exercises that will be provided at the end of the class, and which must be handed in at the next session.

Monitoring of the practical laboratory sessions (15%). Monitoring will be carried out in the same way as for the theory and problem sessions.

Individual written test (40%). At the end of all the sessions there will be a written test that will include the content of the whole course. The test will be eminently practical.

Group work (30%). Students will be given a database in order to develop a data analysis work, including both descriptive and inferential statistics aspects. The guidelines for carrying out the work, as well as the number of members of the groups, will be made explicit when the database is handed in.

Re-evaluation. As specified above, whoever has a mark lower than 4 in any of the evaluations, or has a weighted average lower than 5, will have to take a synthesis test.

Those who have not taken either the individual test or the group work, but have taken the re-evaluation, will be marked as failed in the evaluation report. On the other hand, those who take either of these two tests or the re-evaluation will be considered to have dropped the course and the final grade will be a fail.

Plagiarism

The student who performs any irregularity (copy, plagiarism, identity theft, etc.) that may lead to a significant variation in the grade of an act of evaluation, will be graded with 0 this act of evaluation. In case of more than one irregularity, the final grade of the subject will be 0.

Second Enrolement

In the case of a second enrolment, students can do a single synthesis assignment that has to be discussed previously with the professor/s

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Unique evaluation

The single evaluationoption for this subject consists of three parts:

- Individual written test, with a weight of 50% of the final grade

- Individual written work, with a weight of 30% of the final grade

- Delivery of a selection of practical exercises 20% of the final grade

The date of this assessment will coincide with that of the written continuous assessment test. The recovery date will coincide with the recovery of the continuing assessment.

Re-evaluation: ongoing evaluation

a) According to regulations, to be able to participate in the recovery process, students must have been previously assessed at least 2/3 of the subject's total assessable activities.

b) The theory can only be recovered if the student has taken the theory test set in the assessment continued and a grade lower than 4.9 has been obtained. The make-up test will consist of a test written evaluation of theoretical knowledge.

c) The student who has suspended one of the practices or has not presented it (as long as it is because reasons accredited or acceptable by the teaching team) will have the option to present themselves recovery during the period established ad hoc The recovery of each practice will consistofthe resolution of a case or communication problem in the classroom (day and time to be determined).

d) The final work of the subject (is an assessable work that cannot be recovered in case of suspend it The reason is because doing a job of this nature is practical impossible to do with the time we have in recovery.

Re-evaluation: single evaluation

a) According to regulations, to be able to participate in the recovery process, students must have been previously assessed at least 2/3 of the total assessable activities of the assignment.

b) The theory test can only be retaken if the student has obtained a grade lower than 4.9. The recovery test will consist of a written test to assess theoretical knowledge.

c) The grade obtained in the resolution of communication cases or challenges will form part of the average weighted final grade. Only in case of failing this test and if the student considers it so may choose to recover it with a test of the same nature.

d) Both the documentary research work and the final work are not recoverable and the grade obtained in each assignment (whether passed or not) will form part of the weighted average of the final grade.

Bibliography

Bardina, Xavier; Farré, Mercè; López Roldán, Pedro (2005). *Estadística: un curs introductori per a estudiants de ciències socials i humanes. Descriptive and exploratory bivariate statistics. Introducció a la inferència*. Col·lecció Materials 166. Universitat Autònoma de Barcelona.

Epstein, Joshua M. (2008) "Why model?"
http://www.uvm.edu/pdodds/teaching/courses/2009-08UVM-300/docs/others/2008/epstein2008a.pdf

Farré, Mercè (2005). *Estadística: un curs introductori per a estudiants de ciències socials i humanes. Descriptive and exploratory univariate statistics*. Col·lecció Materials 162. Universitat Autònoma de Barcelona.

López-Roldán, Pedro; Fachelli, Sandra (2015). *Methodology of Quantitative Social Research*. Dipòsit Digital de Documents, Universitat Autònoma de Barcelona. Digital edition: http://ddd.uab.cat/record/129381

Moore, David S. (2005). *Basic Applied Statistics (*second edition). Antoni Bosch editor.

Portilla, Idoia (2004). *Descriptive statistics for communicators. Aplicaciones a la publicidad y las relaciones públicas*, Ediciones Universidad de Navarra.

Sánchez Carrión, Juan Javier (1999). *Manual de análisis de datos*, Alianza Editorial.

Note

Complementary bibliography for the different parts of the programme can be found in the materials available on the Virtual Campus.

Given the eminently practical nature of the course, the readings that appear in this bibliography are not compulsory, but for consultation; designed to complement the explanations developed in the classroom and to clarify possible doubts. They will also be useful for all those who, for whatever reason, are unable to attend any of the sessions.

Software

Excel, a word processor and PowerBI will be used.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(SEM) Seminars	71	Catalan	first semester	afternoon
(SEM) Seminars	72	Catalan	first semester	afternoon
(TE) Theory	7	Catalan	first semester	afternoon