

Degree programme	Type	Course
Sociology	OB	3

Contact lecturer

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Prerequisites

In order to be able to take this course, it is advisable to have successfully followed up the Quantitative Methods of Social Research and Analysis Methods.

Group languages

You can consult this information at the [end](#) of the document.

Objectives

This is an introductory course to the techniques of multivariate statistical data analysis that is proposed as a continuation of the quantitative perspective of social research initiated in the degree. The procedures, methods and techniques already discussed so far will be expanded to consider what we can generally call the transition from bivariate analysis procedures to multivariate analysis procedures.

In the context of the itinerary of technical and methodological subjects, which seek to offer a complete overview of the different procedures of the sociological scientific activity, and given the extension and variety of the analysis procedures in the field of social sciences, it entails directing the teaching towards the selection of a few topics or instruments considered as some of the most fundamental and of greatest interest in the practice of sociological research.

Specifically, the subject aims to:

1) From the point of view of the students, the construction of their learning will be carried out from:

- Knowledge and understanding of the main concepts associated with the multivariate analysis of statistical data, exemplified by sociological concepts.
- The ability to apply technical instruments for the advanced analysis of statistical data considered in the course.
- Know how to use statistical software for statistical analysis bivariate and multivariable.
- Know how to interpret the statistical results of a data analysis from the technical and substantive point of view according to some knowledge and study objectives of the social reality.

2) From the general conditions of a subject of this type in relation to the use of students it is about:

- Facilitate the understanding, management and interpretation of a basic algebraic and statistical conceptual system to assimilate the use of techniques that involve the quantification and formalization of social phenomena.
- Framing in a balanced, comprehensive and integrating way the contents of this subject within the set of the usual methods in sociology.

Learning outcomes

1. Students must be capable of assessing the quality of their own work.
2. Students must be capable of managing their own time, planning their own study, managing the relationship with their tutor or adviser, as well as setting and meeting deadlines for a work project.
3. Working in teams and networking in different situations.
4. Searching for documentary sources starting from concepts.
5. Developing critical thinking and reasoning and communicating them effectively both in your own and other languages.
6. Developing self-learning strategies.
7. Mentioning the main concepts of sociology.
8. Indicating their dimensions, their possible quantitative indicators and the significant qualitative evidence in order to empirically observe them.
9. Identifying the main quantitative and qualitative methods and techniques.
10. Explaining the methodological basis of these quantitative and qualitative methods and techniques.
11. Relating them with the different approaches of sociology.
12. Using the univariate statistical tools.
13. Using the appropriate software to the univariate statistical tools.
14. Measuring a social phenomenon with these instruments on the basis of a theoretical framework of analysis.
15. Using the basic multivariate statistical tools.
16. Using the appropriate software to the basic multivariate statistical tools.
17. Using the advanced multivariate statistical tools.
18. Using the appropriate software to the advanced multivariate statistical tools.
19. Defining concepts of analysis.
20. Formulating a hypothesis with these concepts.
21. Preparing an analytical tool that is significant to this hypothesis.
22. Obtaining conclusions from the information obtained with this tool.

Contents

General introduction

- Objectives of the subject, contents, course dynamics and evaluation
- Multivariate analysis: characteristics and classification of techniques
- Software for the analysis of statistical data

PART I. Analysis of interdependence with qualitative variables

Unit 1. Analysis of contingency tables

- Classic analysis of multidimensional contingency tables

Unit 2. Log-linear analysis

- General linear logarithmic analysis

PART II. The dependence analysis

Unit 3. Analysis of variance

- One-way analysis of variance
- Analysis of multivariate variance

Unit 4. Regression analysis

- Simple regression analysis
- Multiple regression analysis

PART III. The analysis of interdependence for the construction of typologies

Unit 5. Factor analysis

- Mathematical foundations of multivariate data analysis
- Factor analysis of principal components
- Factor analysis of correspondences

Unit 6. Cluster analysis

- Cluster analysis and the construction of typologies
- Automatic cluster analysis

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Programmed individual tutorials	2	0.08	
Readings	30	1.2	
Individual preparation of practical exercises	30	1.2	
Master classes	30	1.2	
Individual work	30	1.2	
Classroom practices	16	0.64	

The course is presented with a continuous dynamic of teaching and learning, which implies tracking the rhythms of the course and the various contents that have been designed in accordance with the different scheduled activities. The contents of each unit have a thread linked to the research process and the continuity of the learning of concepts and instruments that are incorporated progressively, as well as the resolution of problems and questions, which are based in the assimilation and practice of each previous topic of each unit.

Since the objective of the training is that students learn to research sociology using advanced statistical techniques, the teaching methodology and the training activities of the subject result from the combination of expositive sessions with problem solving exercises and practices in the classroom that allow to apply the acquired concepts and explained techniques, as well as tutorials of follow-up and autonomous work.

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

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Analysis works	82,0%	0	0	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22
Practical exercises	18,0%	12	0.48	6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 22

The subject is evaluated continuously. It is important to monitor and attend class sessions regularly in order to ensure learning, progressive assimilation of the subject matter and proper assessment. In order to pass the subject, a minimum final average grade of 5 out of 10 will be required. Three aspects are combined in the evaluation:

Evaluation activities

1) The analysis works (82%): 2 works, carried out in groups of 2 or 3 people, of sociological analysis of quantitative data with a database chosen by the students and with the help of software, in relation to the following topics:

1. Analysis of multidimensional and log-linear contingency tables

a) Tutoring of the work (2%)

b) Selection of data and formulation of hypotheses (5%)

c) Complete analysis work (34%)

2. Typological analysis combining factor and classification analysis

a) Tutoring of the work (2%)

b) Selection of data and formulation of hypotheses (5%)

c) Complete analysis work (34%)

- They will be prepared in content and form as an academic research article according to a defined format and with a maximum length of 3,500 words of writing, annexes separately.

- It will be necessary to carry out a mandatory tutorial, face-to-face or by Teams, with all the members of the group, before the first delivery of each assignment, in order to guide its correct completion and comment on the data chosen, the hypotheses formulated and the first analyses based on the previous preparation work of the students in the group.

- A minimum grade of 5 out of 10 is required for each assignment. Assignments with a grade of less than 5 may be retaken at any time and before the date set in the assessment calendar. It will be necessary to resubmit the work with the corrections made and a page will be attached at the end of the work document where the corrections made in relation to the work initially presented will be briefly explained. The recovery will be scored out of a maximum of 7.

- Situations in which non-evaluation or failure of the subject will be considered:

- Failure to submit the works or submission after the deadline without prior justification on the delivery date.
- The incomplete presentation of the analyses.
- Not doing the mandatory tutoring of the work by presenting the first results.

- Failure to present the two papers will be the criterion for assigning "Not assessed" as the evaluation of the subject.

2) Practices (18%): there will be 6 practice sessions that will consist of carrying out exercises in the computer room to apply the data analysis techniques processed:

1. Analysis of multidimensional and log-linear contingency tables

2. Analysis of variance

3. Regression analysis

4. Factor Analysis of Principal Components

5. Factor analysis of multiple correspondences

6. Classification analysis

The evaluation of the activity will be the result of the grade obtained in a questionnaire of questions about each practical exercise. The practices will be done individually. If the practice is not done in the classroom, the scheduled day for a justified reason can be recovered before a week has elapsed and the grade will be 5. Outside this period, it will be considered not carried out.

3) In order to be evaluated of the subject, a minimum follow-up of 50% will be required in relation to all the activities proposed throughout the course, including the specific activities of each day of class. The monitoring includes the continuity of training and learning through the different activities of continuous assessment and attendance in classes, regardless of the individual circumstances that at a given time make this monitoring difficult, and expresses what is considered a minimum training process of the content of the subject for its basic assimilation. Otherwise, the learning of the subject is considered difficult and insufficient for this assimilation and the adequate performance of the evaluation activities. Additionally, if the subject is monitored equal to or greater than 80%, it will be possible to add up to 0.5 points to the final grade of the subject.

Use of Artificial Intelligence (AI)

In this subject, the use of Artificial Intelligence technologies is allowed as an integral part of the development of the work, provided that the final result reflects a significant contribution of the student in the analysis and personal reflection. The student will have to clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how they have influenced the process and the final result of the activity. The non-transparency of the use of AI will be considered a lack of academic honesty and may lead to a penalty in the grade of the activity, or greater sanctions in cases of severity. The performance of any irregularity in an act of evaluation, academic fraud, plagiarism or improper use of AI, means that this act will be graded with a 0, and a disciplinary process may be instructed to the student who incurs in any of these irregularities. The teaching staff reserves the right to carry out oral interviews or an alternative test, in order to check the effective acquisition of knowledge and skills and therefore the validity of the assessment tests carried out by the students.

Bibliography

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Further reading

The manual *Metodología de la investigación social cuantitativa* (MISC) contains in each chapter a list of specific bibliographic references that complement the basic bibliography.

Selected bibliographical references:

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<https://r4ds.hadley.nz/> | <https://es.r4ds.hadley.nz/>

Software

The course will use the R software for statistical data analysis.

In addition, Moodle, MS-Office (Word, Excel) and Adobe Acrobat will be used.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	1	Catalan	first semester	morning-mixed
(SEM) Seminars	1	Catalan	first semester	morning-mixed
(TE) Theory	51	Catalan	first semester	afternoon
(SEM) Seminars	51	Catalan	first semester	afternoon