

Degree programme	Type	Course
Political Science and Public Management	FB	1

Contact lecturer

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Teaching staff

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Group languages

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

Prerequisites

None.

Objectives

The aim of this course is to familiarize students with the practice of data analysis. Students will learn to import, transform, and explore data to formulate and answer questions. We will prioritize practical training and the interpretation and presentation of results over mathematical issues. The course revisits the use of spreadsheets and introduces students to the R language of statistical computing through RStudio, to provide the essential tools for data management, description, and visualization, reproducibility, and effective communication of results. Throughout the course we will work with real-world, socially relevant data, while also encouraging a critical and responsible usage of open data.

Learning outcomes

1. Synthesizing and critically analysing information.
2. Interpreting and applying English texts in an academic way.
3. Arguing from different theoretical perspectives.
4. Working by using quantitative and qualitative analysis techniques in order to apply them to research processes.
5. Using the main information and documentation techniques (ICT) as an essential tool for the analysis.
6. Demonstrating good writing skills in different contexts.
7. Showing a good capacity for transmitting information, distinguishing key messages for their different recipients.
8. Realising effective oral presentations that are suited to the audience.
9. Managing the available time in order to accomplish the established objectives and fulfil the intended

task.

10. Working autonomously.
11. Designing data collection techniques, coordinating the information processing and meticulously applying hypothesis verification methods.
12. Designing and planning an investigation in the field of political sciences.
13. Critically assessing the usage of inductive, deductive and comparative methods.
14. Critically assessing the use of analytical instruments to validate the hypothesis raised.
15. Demonstrating the comprehension of the logic behind the scientific analysis of political sciences.
16. Managing the methodological foundations of political sciences.
17. Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
18. Develop strategies for autonomous learning.
19. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
20. Make changes to the methods and processes of the area of knowledge to provide innovative responses to the needs and wishes of society.
21. Assess the social, economic and environmental impact when acting in this field of knowledge.
22. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
23. Analyse political databases in each case using the appropriate basic techniques of descriptive statistics and inferential statistics.
24. Apply the corresponding statistical techniques to distinct case studies and interpret the results obtained.
25. Use computer tools to collect, import, manipulate, visualise, describe, and model data of all kinds, and present the results.

Contents

1. Fundamentals of computing
2. Basic mathematical skills
3. Data: observations, variables, data frames
4. Explore and describe variables: visualization and numerical summaries
5. Explore and describe relationships between variables
6. Obtaining data
7. Data wrangling and management
8. Communication and reproducibility

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Study, readings, assignments	83.5	3.34	
In-class sessions: lecture and lab activities	49.5	1.98	
Tutorials	15	0.6	

Most of the sessions consist of a mix of lecture and lab activities. Students are expected to bring their laptops to class.

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
Assessment tests and take-home assignments	45%	0	0	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 23, 24, 25
Final exam	45%	2	0.08	1, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25
Class attendance and in-class exercises	10%	0	0	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

The evaluation will be based on the following activities:

- Class attendance and in-class exercises (10%). Attendance to the corresponding class is mandatory to pass an exercise. No late submissions will be accepted. Those who pass at least 70% of the exercises will obtain a score of 10 in this part of the evaluation. This part of the evaluation is not recoverable.
- Assessment tests and take-home assignments (45%). A minimum of 2 assessment tests and/or take-home assignments. No late submissions will be accepted. This part of the evaluation is not recoverable.
- Final exam (45%). A closed-book, written exam covering the course content.

To pass the course, it is required that all the following conditions are met:

1. Having previously been evaluated for at least two thirds of the total evaluation activities of the subject.
2. Achieving a final grade greater than or equal to 5.
3. Achieving a grade on the final exam (or on the retake exam) greater than or equal to 4.

Students who do not meet any of these three requirements may not obtain an overall grade higher than 4.5, regardless of the score resulting from the weighted sum of all activities.

Retake process

Only the portion of the grade corresponding to the exam is recoverable; class attendance, in-class exercises, assessment tests, and home assignments are excluded from the retake process.

To be eligible to participate in the retake process, it is required that the student has been previously evaluated for at least two thirds of the total evaluation activities of the subject. Students with an average grade on the exams below 4 or an overall course grade below 5 may take the retake exam. There will be a single retake exam covering the entire course content, regardless of the specific grades obtained on the midterm exams.

Important considerations

- This course does not allow for unique assessment.
- The fact of taking any of the exams or submitting any of the assignments or assessment tests exempts the student from the "Not assessable" grade.
- No exams will be held outside the dates set by the Faculty and no continuous assessment tests will be held outside the dates set by the teaching staff.
- In accordance with article 117.2 of the UAB Academic Regulation, the evaluation of those students who have been enrolled before may consist of a single synthesis examination. The students who wish to be evaluated this way should contact the professor at the beginning of the semester (first week of October at the latest).
- In this course, the use of Artificial Intelligence (AI) technologies is permitted for the completion of assignments and exercises exclusively in support tasks, such as information searching or text and code

correction. Students must clearly identify the tasks in which they have used this technology and specify the tools employed. However, these tools must not replace independent study or genuine understanding of the code by the student. Failure to disclose the use of AI in this graded activity will be considered a breach of academic integrity and may result in partial or full penalties on the activity grade, or more serious sanctions in severe cases. When the code submitted in a practical assignment or home exercise is significantly different from what has been covered in class, or includes functions, structures, or libraries not explained during the course, this will be treated as a likely indicator of inappropriate use of AI and will be graded with a zero (0), regardless of its technical correctness.

- Any irregularity committed in an assessment activity (academic fraud, plagiarism, or improper use of AI, unless such use is expressly authorized in the course syllabus) that may lead to a significant alteration of the grade will result in that activity being graded 0. If the irregularity occurs during the final exam, or if irregularities are detected in different assessment activities, the final grade for the course will be 0. In addition, disciplinary proceedings may be initiated against any student who engages in any of these irregularities. The teaching staff reserves the right to conduct oral interviews or an alternative assessment in order to verify the effective acquisition of knowledge and skills and, consequently, the validity of the assessment activities completed by students.

Bibliography

Basic

Çetinkaya-Rundel, M., & Hardin, J. (2024). *Introduction to Modern Statistics* (2nd ed.). OpenIntro. Accessible at: openintro-ims.netlify.app.

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Wickham, H., & Grolemund, G. (2023). *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data* (2nd ed.). O'Reilly Media. Accessible at: r4ds.hadley.nz. Spanish version: es.r4ds.hadley.nz.

Complementary

Baumer, B., Kaplan, D., & Horton, N. J. (2021). *Modern data science with R* (2nd ed). CRC Press. Freely available at mdsr-book.github.io/mdsr2e.

Bolker, E. D., & Mast, M. B. (2020). *Common Sense Mathematics* (2nd ed). American Mathematical Society.

Broman, K. W., & Woo, K. H. (2018). Data Organization in Spreadsheets. *The American Statistician*, 72(1), 2-10. doi.org/10.1080/00031305.2017.1375989.

Chang, W. (2018).. *R Graphics Cookbook: Practical Recipes for Visualizing Data* (2nd ed). O'Reilly Media. Freely available at r-graphics.org.

De Veaux, R. D., Velleman, P. F., & Bock, D. E. (2021). *Stats: Data and Models*. Pearson.

Dougherty, J., & Ilyankou, I. (2021). *Hands-On Data Visualization*. O'Reilly Media. Freely available at handsondataviz.org.

Healy, K. (2018). *Data visualization: A practical introduction*. Princeton University Press. Freely available at socviz.co.

Klass, G. M. (2012). *Just Plain Data Analysis: Finding, Presenting, and Interpreting Social Science Data* (2nd ed). Rowman & Littlefield.

Llaudet, E., & Imai, K. (2023). *Data analysis for social science: A friendly and practical introduction*. Princeton University Press.

Mas Elias, Jordi. (2020). *Análisis de Datos con R en Estudios Internacionales*. Editorial UOC. This book can be accessed via the ARE service:

<https://login.are.uab.cat/login?url=https://login.are.uab.cat/login?url=https://elibro.net/es/ereader/uab/167261>.

Miller, J. E. (2022). *Making Sense of Numbers: Quantitative Reasoning for Social Research*. Sage.

Sevilla, A. N., & Somers, K. (2013). *Quantitative Reasoning: Tools for Today's Informed Citizen* (2nd ed). Wiley.

Wilke, C. (2019). *Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures*. O'Reilly Media. Freely available at clauswilke.com/dataviz.

Software

Microsoft Excel

R r-project.org

RStudio rstudio.com

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
(PAUL) Classroom practices	1	Catalan	first semester	morning-mixed
(TE) Theory	51	Catalan	first semester	afternoon
(PAUL) Classroom practices	51	Catalan	first semester	afternoon