Research Methods

Code: 101102
ECTS Credits: 6

2025/2026

Degree	Type	Year
Political Science and Public Management	OB	3

Contact

Name: Danislava Milkova Marinova

Email: dani.marinova@uab.cat

Teachers

Juan Pérez Rajó

Teaching groups languages

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

Prerequisites

It is essential to have passed the compulsory course *Methodology of Political Analysis* from the second year of the undergraduate degree.

Objectives and Contextualisation

The aim of this course is that students familiarize with the main social science research techniques and learn how to use them. The bulk of the course is devoted to linear regression analysis and its extensions. We will prioritize practical training and the interpretation and presentation of results over mathematical issues. At the same time, the course will introduce students to the R language of statistical computing through RStudio, to provide the essential skills for data management, exploratory data analysis, data visualization, reproducibility, and effective communication of results. Throughout the course we will work with real-world, socially- and politically-relevant data, while also encouraging a critical and responsible usage of open data.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Applying the different behaviour analysis techniques and political actors to real cases from the internal and international political arena.
- Applying the discipline's main theories and different fields to real practical and professional problems.
- Arguing from different theoretical perspectives.

- Assess the social, economic and environmental impact when acting in this field of knowledge.
- Demonstrating good writing skills in different contexts.
- Demonstrating the comprehension of the logic behind the scientific analysis of political sciences.
- Designing data collection techniques, coordinating the information processing and meticulously applying hypothesis verification methods.
- Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
- Develop strategies for autonomous learning.
- Interpreting and applying English texts in an academic way.
- Make changes to the methods and processes of the area of knowledge to provide innovative responses to the needs and wishes of society.
- Managing the available time in order to accomplish the established objectives and fulfil the intended task.
- Managing the methodological foundations of politic sciences.
- Realising effective oral presentations that are suited to the audience.
- Showing a good capacity for transmitting information, distinguishing key messages for their different recipients.
- Synthesizing and critically analysing information.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Using the main information and documentation techniques (ICT) as an essential tool for the analysis.
- Working autonomously.
- Working by using quantitative and qualitative analysis techniques in order to apply them to research processes.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Analyse political databases in each case using the appropriate basic techniques of descriptive statistics and inferential statistics.
3. Apply the corresponding statistical techniques to distinct case studies and interpret the results obtained.
4. Arguing from different theoretical perspectives.
5. Assess the social, economic and environmental impact when acting in this field of knowledge.
6. Critically assessing the usage of inductive, deductive and comparative methods.
7. Critically assessing the use of analytical instruments to validate the hypothesis raised.
8. Demonstrating good writing skills in different contexts.
9. Demonstrating the comprehension of the logic behind the scientific analysis of political sciences.
10. Designing and planning an investigation in the field of political sciences.
11. Designing data collection techniques, coordinating the information processing and meticulously applying hypothesis verification methods.
12. Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
13. Develop strategies for autonomous learning.
14. Interpreting and applying English texts in an academic way.
15. Make changes to the methods and processes of the area of knowledge to provide innovative responses to the needs and wishes of society.
16. Managing the available time in order to accomplish the established objectives and fulfil the intended task.
17. Managing the methodological foundations of politic sciences.
18. Realising effective oral presentations that are suited to the audience.
19. Showing a good capacity for transmitting information, distinguishing key messages for their different recipients.
20. Synthesizing and critically analysing information.
21. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
22. Use computer tools to collect, import, manipulate, visualise, describe, and model data of all kinds, and present the results.

23. Using the main information and documentation techniques (ICT) as an essential tool for the analysis.
24. Working autonomously.
25. Working by using quantitative and qualitative analysis techniques in order to apply them to research processes.

Content

1. Data visualization and exploratory data analysis
2. Data management
3. Simple linear regression
4. Multiple regression
5. Categorical independent variables
6. Regression models for categorical dependent variables
7. Interaction effects

8. Logistic regression

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lab and in-class exercises	19.5	0.78	4, 9, 8, 10, 11, 18, 16, 19, 20, 25, 24, 17, 23, 7, 6
Lectures	30	1.2	4, 9, 8, 10, 11, 18, 16, 19, 20, 25, 17, 23, 7, 6
Type: Supervised			
Tutorials	15	0.6	4, 9, 8, 10, 11, 18, 16, 19, 20, 25, 24, 17, 23, 7, 6
Type: Autonomous			
Study	83.5	3.34	4, 9, 8, 10, 11, 16, 19, 20, 25, 24, 17, 23, 7, 6

There are two types of directed activities:

1. Lectures
2. Lab and in-class exercises

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

Final exam	25%	2	0.08	1, 21, 5, 2, 3, 4, 9, 8, 13, 12, 10, 11, 22, 16, 14, 15, 19, 20, 25, 24, 17, 23, 7, 6
Lab assignment 1	15%	0	0	4, 9, 8, 10, 11, 18, 16, 19, 20, 25, 24, 17, 23, 7, 6
Lab assignment 2	15%	0	0	4, 9, 8, 10, 11, 18, 16, 19, 20, 25, 24, 17, 23, 7, 6
Mid-term exam 1	20%	0	0	1, 2, 3, 9, 13, 12, 10, 22, 16, 24, 17, 7, 6
Mid-term exam 2	25%	0	0	21, 2, 3, 9, 8, 22, 14, 15, 19, 20, 23

Assessment

Assessment will be based on the results of the following activities:

1. Home exercises (10%). Submissions after the established deadline will not be accepted. This activity is not eligible for resit under any circumstances.
2. Evaluable practical assignment (15%). In order for the practical assignment to be assessed, attendance at the corresponding session is required. Late submissions will not be accepted. This activity is not eligible for resit.
3. Midterm exams (40%). Two computer-based written tests will be administered, during which course materials may be consulted. This activity is not eligible for resit.
4. Final exam (30%). Written exam covering the entire course content. No reference material will be allowed.
5. Class participation (5%). Regular attendance and active participation. Not eligible for resit.

To pass the course, the following three requirements must be met:

The student must have been assessed in activities that account for at least two-thirds of the total grade.

The student must achieve an overall course grade equal to or greater than 5.

The student must obtain a grade of at least 4 on the final exam.

Resit

The resit exam is graded on a pass or fail basis. If students pass the exam, they will receive a final grade of 5 for the course.

To be eligible for the resit, students must:

- Have been assessed in activities that account for at least two-thirds of the total grade.
- Have an overall course grade equal to or greater than 3.5.

Midterm exams and graded assignments cannot be retaken, except in cases of duly justified medical reasons. Students who need to resit an assignment or a midterm exam will do so on the date set by the School for the resit exam.

Other considerations

Submitting any assignment or sitting any exam disqualifies the student from receiving a "No Show" grade.

This course does not allow for single-assessment evaluation, as established by the Faculty Board, since regular class attendance is essential for achieving the learning objectives.

According to Article 117.2 of the UAB Academic Regulations, repeat students may, at the discretion of the instructor, be allowed to take a single synthesis exam. Students wishing to opt for this must contact the instructor no later than the first week of October.

Final exams and resit exams will not be scheduled outside the official dates set by the Faculty. Likewise, continuous assessment activities will only be administered on the dates set by the instructor.

Detection of plagiarism in any exam or assignment will automatically result in a failing grade for the course.

The use of artificial intelligence (AI) tools can be helpful in an applied statistics course, particularly for identifying syntax errors or suggesting improvements to code. However, these tools cannot replace independent study or genuine understanding of the code by the student. The aim of the course is for students to understand and be able to apply statistical methods on their own.

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.

Bibliography

Basic

- Çetinkaya-Rundel, Mine, & Johanna Hardin. 2021. *Introduction to Modern Statistics*. OpenIntro. Freely available at openintro-ims.netlify.app.
- Mas Elias, Jordi. 2020. *Análisis de Datos con R en Estudios Internacionales*. Barcelona: 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/1672
- Gelman, Andres; Hill, Jennifer; & Vehtari, Aki. 2021. Regression and Other Stories. Cambridge University Press

Complementary

- Chang, Winston. 2018. *R Graphics Cookbook: Practical Recipes for Visualizing Data*. Second edition. Beijing; Boston: O'Reilly. Freely available at r-graphics.org.
- Ismay, Chester, & Albert Young-Sun Kim. 2020. *Statistical Inference via Data Science: A ModernDive into R and the Tidyverse*. Chapman & Hall/CRC the R Series. Boca Raton: CRC Press / Taylor & Francis Group. Freely available at moderndive.com.
- Riba, Clara, & Anna Cuxart. 2013. *Regresión Lineal Aplicada*. Barcelona: Documenta Universitaria.
- Wickham, Hadley, & Garrett Grolemund. 2016. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. Sebastopol, CA: O'Reilly. Freely available at r4ds.had.co.nz. Spanish version: es.r4ds.hadley.nz.

Software

- R r-project.org
- RStudio rstudio.com

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	1	Catalan	first semester	morning-mixed
(SEM) Seminars	51	Catalan	first semester	afternoon
(TE) Theory	1	Catalan	first semester	morning-mixed
(TE) Theory	51	Catalan	first semester	afternoon