UAB
Universitat Autònoma de Barcelona

2020/2021

Quantitative Research Methods in Criminology

Code: 100450
ECTS Credits: 6

Degree	Type	Year	Semester
2500257 Criminology	OB	2	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: **catalan (cat)**

Some groups entirely in English: **No**

Some groups entirely in Catalan: **No**

Some groups entirely in Spanish: **No**

Other comments on languages

The language of the course will be Catalan. However, the language may be modified to Spanish in case international students would attend the course. The course materials are written in Catalan, Spanish and English.

Teachers

Irene Cruz Gomez

Prerequisites

• No previous training in statistics is required. However, knowledge in mathematics will help students to effectively learn the course contents.

Objectives and Contextualisation

Quantitative Research Methods is a course designed to introduce students to statistical data analysis as a tool for criminological research.

The Degree in Criminology trains students to use criminological methods and techniques to analize data about conflict, crime, and social control. To that end, the course objectives are:

1) Learning the basic statistical concepts of descriptive statistics.

2) Acquiring autonomy in the use of software for quantitative data analysis and its application in criminology.

3) Performing quantitative data analyses, both descriptive and inferential.

4) Identifying and knowing how to apply these concepts in criminological research projects.

This course is part of the degree's research methods itinerary. On the one hand, it is a continuation of the

courses "Scientific research in criminology", and "Criminological Data Sources", in the first year,in which the logic of the research process in social sciences and criminological data is presented. On the other hand, this course has continuity in "Data Analysis", taught in the second semester, which deals with multivariate analysis.

Competences

- Ability to analyse and summarise.
- Accessing and interpreting sources of crime data.
- Applying the quantitative and qualitative data collection techniques in the criminological field.
- Clearly explaining and arguing a carried out analysis about a conflict or crime problem and its responses in front of specialised and non-specialised audiences.
- Designing a criminological research and identifying the appropriate methodological strategy to the proposed goals.
- Drawing up an academic text.
- Working autonomously.

Learning Outcomes

1. Ability to analyse and summarise.
2. Applying the quantitative and qualitative data collection techniques in the criminological field.
3. Choosing the appropriate research methodology in criminological works.
4. Drawing up an academic text.
5. Interpreting in a scientific way statistical data from the criminological field.
6. Transmitting in a reasoned manner the results of a criminological research.
7. Working autonomously.

Content

PART I. THE DATA ANALYSIS SOFTWARE

Unit 0: The data, its treatment and the program

0.1. The graphical user interface

0.2. How the code is structured in the R language

0.3. Interpreting and understanding warnings and error messages

0.4. Objects and classes

0.5. The structure of functions

0.6. Doubts, documentation, and how to solve problems

PART II. DATA PROCESSING

0.7. Structure and dimensionality

0.8. Reading data

0.9. Selecting subsets

0.10. Transformations, recodifications

0.11. Calculating variables

0.12. Logical operations

PART III. DESCRIPTIVE ANALYSIS

Unit 1. Univariate descriptive statistics

1.1. What is descriptive analysis

1.2. Fundamentals of descriptive statistics

1.2.1. The concept of measurement and the levels of measurement

1.2.2. The data and the data set

1.2.3. Observations and variables

1.3. Frequency distribution tables

1.3.1. Absolute, relative and cumulative frequencies

1.3.2. Bar charts and sector diagrams

1.4. Summary measures of the distribution of a variable

1.4.1. Central tendency measures: mode, median and average

1.4.2. Position measures: quantiles

1.4.3. Dispersion measures: range, variance, standard deviation

1.4.4. The histogram

1.4.5. The boxplot

1.5. The normal distribution

Unit 2. Descriptive bivariate analysis

2.1. The analysis of contingency tables

2.1.1. Presentation and nomenclature

2.1.2. The different parts of a contingency table

2.1.3. Stacked bar charts

2.2. Comparing means

2.2.1. Descriptive statistics by groups

2.2.2. Grouped boxplots

2.3. Correlation

2.3.1. Concept and calculation

2.3.2. Scatterplots

PART IV. FUNDAMENTALS OF INFERENTIAL STATISTICS

Unit 3. Statistical sampling

3.1. Sample, sampling frame and population

3.1.1.Types of sampling

3.1.2. Sample size and sample error

Unit 4. Hypothesis testing

4.1. The logic of hypothesis testing. Null and alternative hypothesis

4.2. The conditions of application of a test

4.3. The Chi2 test for contingency tables

Methodology

Statement

Teaching will be mixed: lectures will be online and seminars face-to-face.

Teaching and assessment methods may be submitted to change in case health authorities impose restrictions to access to campus.

Before the beginning of the course, a detailed schedule of the weekly activities will be published in the Virtual Campus. The activities performed during the course are the following:

- Lectures: on the concepts and theory behind statistical analysis procedures (classroom)
- Practical sessions: Statistical exercises and resolution of problems using the analysis software (PC lab)
- Evaluation sessions: Individual theoretical-practical tests solving problems using the statistical software (PC lab)
- Tutorials: All students can receive personal attention by the faculty at times to be arranged. Additionally, professors may establish mandatory tutoring sessions to monitor the course work.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Exam	5	0.2	2, 5, 1, 7
Lectures	19.5	0.78	2, 5, 1
Workshops	19.5	0.78	2, 5, 1
Type: Autonomous			
Exam preparation	30	1.2	2, 5, 1, 7
Exercices and reading	46	1.84	2, 3, 5, 1, 7
Group paper	30	1.2	2, 5, 1

Assessment

A s s e s s m e n t   a c t i v i t i e s
A) Weekly exercises (10%):

- Weekly practical sessions will include a series of exercises to be submitted in the following days. The deadline is not flexible, and no exercise will be accepted out of time, except for situations of force majeure.

- The exercises will not be directly corrected, but the solutions will be uploaded to the virtual campus with detailed explanations, to facilitate self-correction, and the solutions will be commented in class.
- The quality of the work developed in these exercises will be taken into account to decide in dubious cases about passing or failing and about being granted honors.

B) Assessment and follow-up activities in the classroom (15%):

- Each session will conclude with a brief set of questions about the contents developed during the class or on reading materials defined for the session.
- This activity cannot be repeated in case of absence. The score for an unjustified absence will be 0. If the absence is justified by force majeure, that activity will not be taken into account in the average.

C) Paper (30%):

- Paper on a quantitative research topic.
- The guidelines for its development and the evaluation criteria will be indicated at the beginning of the course.
- The paper can be written in groups, of a size to be determined, either in Catalan, Spanish or English.
- Serious formal shortcomings (including, but not limited to, bad spelling and failing to follow APA citation rules) may result in a fail mark.
- Students will be required to present a mid-term submission in order to follow up their work. This submission will result in an orientation grade. The final grade can either increase or decrease, depending on the evolutionof thework.
- There is notathird submission option for papers failed in the second submission.

D) Exam (45%)

- The exam will have a theoretical-practical orientation, combining questions about the main concepts of the syllabus, their application in the resolution of problems, and the use of statistical software.
- Candidates having failed the exam will have the opportunity to repeat it, opting to maximum grade of 5

- The course will be passed if the final grade reaches a minimum of 5 out of 10 and a minimum grade of 4 for each assessment item.

Conditions to be assessed:

- In accordance with the Degree policy, 100% attendance is mandatory. Absences can be justified due to force majeure. Absence due to academic reasons will have to be accepted in advance by the professor. A minimum of 80% attendance is necessary to opt to the final exam.
- Punctuality is required. Delays greater than 5 minutes and not justified by force majeure will count as an absence.

Fraudulent conducts

- If any form of plagiarism is detected in any of the assessment activities, these will be rated as 0, with no option to re-evaluate.
- Indications of plagiarism in the weekly exercises, or the inability of students to justify the procedures followed to solve them, will result in a warning and a 0 grade. Any reiteration will result in a 0 grade on the whole course with no option to resit.

Conduct during the course:

UAB fosters a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, disability, gender, gender identity, national origin, religious belief or sexual orientation will not be tolerated under any circumstance, nor will behaviours that create a hostile environment. These will be reported under the university harassment prevention policy.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exam	45%	0	0	3, 5, 1, 7
Exercices	10%	0	0	2, 3, 5, 1
Ongoing assesment	15%	0	0	5, 1, 7
Paper (groups)	30%	0	0	2, 3, 5, 4, 1, 6, 7

Bibliography

Handbooks

The following publications are the basic reference handbooks for the course. Although it is not mandatory, their use is recommended.

Boccardo, Giorgio; Ruiz, Felipe (2019). *RStudio para Estadística Descriptiva en Ciencias Sociales*.

Available at:
https://bookdown.org/gboccardo/manual-ED-UCH/uso-basico-de-rstudio.html#que-es-rstudio-una-interfaz-para-u

López-Roldán, Pedro; Fachelli, Sandra. (2015). *Metodología de la investigación social cuantitativa*. Bellaterra (Cerdanyola del Vallès): Universitat Autònoma de Barcelona.

Available at: https://ddd.uab.cat/record/129382

Additional complementary materials will be made available in the course Moodle.

Other references

Bardina, Xavier; Farré, Mercè; López-Roldán, Pedro. (2005). *Estadística: un curs introductori per a estudiants de ciències socials i humanes. Volum 2: Descriptiva i exploratòria bivariant.* Bellaterra (Barcelona): Universitat Autònoma de Barcelona.

Cea D'ancona, Mª Ángeles. (1998) *Metodología cuantitativa. Estrategias y técnicas de investigación social*. Madrid: Síntesis.

Farré, Mercè. (2005). *Estadística: un curs introductori per a estudiants de ciències socials i humanes. Volum 1: Descriptiva i exploratòria univariant.* Bellaterra (Barcelona): Universitat Autònoma de Barcelona.

Fox, James A.; Levin, Jack; Forde, David R. (2009). *Elementary Statistics in Criminal Justice Research*. Boston: Pearson.

Maxfield, Michael G.; Babbie, Earl R. (2005). *Research Methods for Criminal Justice and Criminology*. Belmont, CA: Thomson Wadsworth.

Walker, Jeffery; Maddan, Sean. (2009). *Statistics in Criminology and Social Justice: Analysis and Interpretation*. Boston: Jonesand Bartlett Pubs.