**2022/2023**

**Statistics Consultancy**

Code: 104877
ECTS Credits: 6

| Degree | Type | Year | Semester |
|---|---|---|---|
| 2503852 Applied Statistics | OT | 4 | 1 |

## Contact

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## Use of Languages

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

## Prerequisites

Descriptive Statistics

Programming tools with Statistical software and data management
Linear Models
Analysis of Categorical Data
Multivariate analysis

## Objectives and Contextualisation

Develop skills necessary to carry out professional consultancy tasks in statistics.

 Covering the different fields of statistical consultancy:

 - Health Sciences,

- Banking and insurance

- Sociological studies and surveys

## Competences

- Correctly use a wide range of statistical software and programming languages, choosing the best one for each analysis, and adapting it to new necessities.
- Critically and rigorously assess one's own work as well as that of others.
- Formulate statistical hypotheses and develop strategies to confirm or refute them.

1

- Identify the usefulness of statistics in different areas of knowledge and apply it correctly in order to obtain relevant conclusions.
- Interpret results, draw conclusions and write up technical reports in the field of statistics.
- Make efficient use of the literature and digital resources to obtain information.
- Select and apply the most suitable procedures for statistical modelling and analysis of complex data.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- 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 be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Use quality criteria to critically assess the work done.
- Work cooperatively in a multidisciplinary context, respecting the roles of the different members of the team.

## Learning Outcomes

1. Critically assess the work done on the basis of quality criteria.
2. Design and conduct hypothesis tests in the different fields of application studied.
3. Draw conclusions that are consistent with the experimental context specific to the discipline, based on the results obtained.
4. Draw up technical reports that clearly express the results and conclusions of the study using vocabulary specific to the field of application.
5. Interpret statistical results in applied contexts.
6. Justify the choice of method for each particular application context.
7. Make effective use of references and electronic resources to obtain information.
8. Reappraise one's own ideas and those of others through rigorous, critical reflection.
9. Recognize the advantages and drawbacks of the different statistical methodologies when studying data from a variety of disciplines.
10. Recognize the importance of the statistical methods studied within each particular application.
11. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
12. 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.
13. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
14. Use different programmes, both open-source and commercial, associated with the different applied branches.
15. Work cooperatively in a multidisciplinary context, accepting and respecting the roles of the different team members.

## Content

Introduction
  Objective of the Statistical Consulting
  Areas of Consultancy and Needs
  Functions and responsibilities of the Statistical Consultant
  Work meetings
  Objectives according to scope
  Budget
Statistical Report
  Summary
  Graphics
  Analysis, Methodology, Validation
  Presentation of results

Productive programming with SAS and / or R
  Syntax files structure
  Implementation of Statistical Techniques
  Functions to reproduce code
  Production of results
Practical cases
  Reports
  Presentation and Review

## Methodology

The subject will follow the following methodology:
  Theoretical classes
  Practical software sessions
  Evaluation of practical cases

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.

## Activities

| Title | Hours | ECTS | Learning Outcomes |
|---|---|---|---|
| Type: Directed | | | |
| Practical cases | 15 | 0.6 | 2, 4, 13, 11, 12, 9, 14, 7 |
| Practical classes | 30 | 1.2 | 8, 1, 2, 4, 3, 5, 6, 13, 11, 12, 9, 10, 15, 14, 7 |
| Theory | 30 | 1.2 | 2, 5, 13, 9 |

## Assessment

The subject will be evaluated by solving one or more practical cases.
  Statistical advice must be carried out, delivering the following documenta
  Initial proposal
  Preliminary report
  Results Report
  Presentation Summary of Results
  Finally, it will be open to present the results of the case in public.
  Intermediate deliveries correspond to the Practices activity.
  Public presentation corresponds to the Presentation activity.

## Assessment Activities

| Title | Weighting | Hours | ECTS | Learning Outcomes |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Oral Presentation | 70 | 75 | 3 | 8, 1, 2, 4, 3, 5, 6, 13, 11, 12, 9, 10, 15, 14, 7 |
| Practices | 30 | 0 | 0 | 8, 1, 2, 4, 3, 5, 6, 13, 11, 12, 9, 10, 15, 14, 7 |

## Bibliography

Cabrera, J.; McDougall A. (2002). Springer-Verlag New York.Statistical Consulting

Statistical Rules of Thumb - Gerald Van Belle - Wiley Series in Probability and Statistics

Common Errors in Statistics (and How to Avoid Them) - Good, Hardin - Wiley

SAS and R: Data Management, Statistical Analysis, and Graphics - Kleinman , Horton - Chapman and Hall

SAS for Mixed Models, Second Edition - Little et al - SAS Publishing

## Software

SAS