Universitat Autònoma de Barcelona

2019/2020

Statistics Consultancy

Code: 104877
ECTS Credits: 6

Degree	Type	Year	Semester
2503852 Applied Statistics	OT	4	0

Contact

Name: Llorenç Badiella Busquets
Email: Llorenc.Badiella@uab.cat

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.

- 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

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