



Universitat de Lleida

DEGREE CURRICULUM **BIostatistics**

Coordination: VILAPRIÑO TERRE, ESTER

Academic year 2019-20

Subject's general information

Subject name	BIostatistics			
Code	101605			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Biotechnology	1	COMMON	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	3		3
	Number of groups	2		1
Coordination	VILAPRIÑO TERRE, ESTER			
Department	BASIC MEDICAL SCIENCES			
Teaching load distribution between lectures and independent student work	At Class 60 hours. At Home 90 hours			
Important information on data processing	Consult this link for more information.			
Language	English, Catalan, Spanish			
Distribution of credits	Magistral 50% Practice 50%			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
GRANADO SERRANO, ANA BELÉN	anabgs@mex.udl.cat	6	
VILAPRIÑO TERRE, ESTER	ester.vilapriño@udl.cat	3	

Learning objectives

- To understand the concept of variability and its influence on the evaluation of results.
- To understand the concept of statistical significance of a result.
- To learn to propose a statistical analysis using the R program
- To understand and know how to use basic statistical models.
- To be able to perform a basic statistical analysis based on the work objectives in each case.

Competences

- To be able to understand and critically evaluate biomedical literature in relation to design, statistical analysis and interpretation of results, as well as knowing how to interpret confidence intervals and statistical significance.
- To be able to design simple studies and analyze and interpret the results according to the objectives set.
- To be able to use the R program to perform statistical analyzes.
- To understand the importance of statistics within the scientific method.
- To understand the importance of statistical evidence in the generalization of results of experiments and observational studies.
- To understand the importance of design in planning a study.

Subject contents

1. **Statistics, Data, and Statistical Thinking**
2. **Descriptive Statistics and Looking Data**
3. **Study Designs**
4. **Probability, Bayes' Rule**
5. **Probability Distributions**
6. **Statistical Inference**
7. **P-values**
8. **Statistical Tests**
9. **Linear Regression Analysis**
10. **Analysis of Variance, ANOVA**

Methodology

In the theory classes the basic concepts will be raised and the technical aspects necessary to make a good analysis of the data will be worked on. The analysis procedures with the R program will be introduced and application examples will be discussed.

In the seminars, concrete examples will be analyzed, emphasizing the use of R as an analysis tool. The practical

sessions, with the exception of the first three, are organized around specific projects that will address the issues to be resolved by the student regarding the methods and procedures of the subject. Students must develop the analysis of several projects and submit reports that will be evaluated. R is a statistical analysis program of great power and free distribution that runs on any platform.

Development plan

- 15 sessions of 2 hours of master classes
- 15 sessions of 2 hours of computer seminars

Evaluation

- 1st Exam 20% NO Recovery exam
- 2nd Exam 45% Recovery exam – EVERYTHING!! At least a 5 is required.
- Final work 25%
- Seminars 10%

Bibliography

Basic:

- Sorribas A, Abella F, Gómez X, March J. (1997) Metodologia estadística en ciències de la salut: Del disseny de l'estudi a l'anàlisi de resultats. Lleida: Edicions de la Universitat de Lleida.
- Daniel WW. (1995) Bioestadística: base para el análisis de las ciencias de la salud. México: UTEMA.
- An Introduction to R. W. N. Venables, D. M. Smith and the R Core Team. <https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf>

Complementary:

- Bland M (2000). An introduction to medical statistics, 3rd ed. Oxford: Oxford University Press.
- Altman DG. (1990) Practical statistics for medical research. Chapman & Hall/CRC; 1st ed.
- Gonick L, Smith W. The cartoon guide to statistics. HarperCollins Publishers, Inc. New York, 1993.

Additional:

- The notes and materials that must be worked during the course will be deposited in the Resources folder of the Virtual Campus.

Adaptations to the evaluation due to COVID-19

- Exam 50% At least a 5 is required.
- Final work 25% CAL ENTREGAR EL 31 DE MAIG
- Practice work 15% CAL ENTREGAR EL 17 DE MAIG
- Seminars and Forum participation 10%