



Universitat de Lleida

DEGREE CURRICULUM
**INFERENTIAL STATISTICS IN
PSYCHOLOGY**

Coordination: MARCH LLANES, JAUME

Academic year 2022-23

Subject's general information

Subject name	INFERENTIAL STATISTICS IN PSYCHOLOGY			
Code	102909			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Psychology	2	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	2.4		3.6
	Number of groups	2		1
Coordination	MARCH LLANES, JAUME			
Department	PSICOLOGIA			
Important information on data processing	Consult this link for more information.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
MARCH LLANES, JAUME	jaume.march@udl.cat	3,6	arranged by mail
PEREIRA PRIEGO, CRISTINA	cristina.pereira@udl.cat	4,8	

Learning objectives

1. Know how to differentiate between the objectives of descriptive statistics and inferential statistics.
2. Understand the sample distribution as a concept that allows to relate a statistic and a parameter.
3. Differentiate between point and interval parameter estimation.
4. To know the different concepts related to the contrast of hypotheses, the mechanism of formulating hypotheses and the one of statistical decision.
5. Know the Types of Errors in the statistical decision and Statistical power.
6. Know the concepts of Critical Value and Level of Significance of a Hypothesis Test.
7. Correctly pose a hypothesis contrast for a proportion, an average, and a variance.
8. Pose and perform the relevant calculations for the study of the relationship between two categorical variables.
9. To propose, with the help of a statistical program, the study of the relationship between a dichotomous independent variable and a quantitative dependent variable.
10. To propose, with the help of a statistical program, the study of the relationship between a polytomous independent variable and a quantitative dependent variable.
11. To propose, with the help of a statistical program, the study of the relationship between two quantitative variables.
12. Approach with the help of a statistical program, a study with several independent variables, and perform the calculations applying the General Linear Model using a statistical package.

Competences

Basic skills:

CB1 Owning and understanding knowledge in a study area that is based on the general secondary education base, and it is often found at a level that, while supported by advanced textbooks, also includes some aspects that involve relevant knowledge from the vanguard of his field of study.

CB2 Apply their knowledge to their work or vocation in a professional way and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.

CB3 Ability to gather and interpret relevant data (usually within its area of study) to issue judgments that reflect on relevant issues of a social, scientific or ethical nature.

CB4 Power to convey information, ideas, problems and solutions to a specialized and non-specialized audience.

General Competences:

CG1 Develop the ability to adapt to new situations and solve problems in an effective way.

CG2 Develop the ability to work in multidisciplinary teams and collaborate efficiently with other professionals.

CG3 Show abilities for interpersonal relationships.

CG5 Demonstrate critical capacity to make relevant decisions.

CG6 Reflect on own limitations in a self-critical way, considering the possibility of requesting interdisciplinary collaborations.

CG7 Act with creativity, research culture and professional communication.

CG9 Recognize diversity and difference as a structural element of the human being, while recognizing, understanding and respecting the cultural complexity of today's society.

Specific Competences:

CE1 Identify and analyze the characteristics and needs of people, groups and organizations, as well as relevant contexts for the requested service.

CE2 Plan the evaluation of programs and / or psychological interventions, selecting Indicators and appropriate techniques.

CE4 Analyze and interpret the results of the psychological evaluation.

CE6 Respond and act appropriately and professionally, taking into account the attitudes and values of the profession, as well as its ethical and ethical code, in each and every one of the intervention processes.

CE7 Provide information to users and establish an appropriate interpersonal relationship, taking into account the different contexts of professional relationship.

CE8 Prepare technical reports, oral and written, about the results of the process of evaluation, research or services demanded, respecting the ethical commitment that demands the dissemination of psychological knowledge.

CE9 Use the different documentary sources in psychology, show a mastery of the strategies necessary to access information and assess the need for documentary update.

CE10 Manage, analyze and interpret data in the frameworks of disciplinary knowledge typical of the different fields of psychology.

CE11 Making decisions critically about the choice, application and interpretation of the results derived from the different methods of psychological research.

CE12 Disseminate knowledge derived from the theoretical reviews and the results of psychological research.

Transversal Competences:

CT1 Acquire adequate oral and written comprehension and expression of Catalan and Spanish.

CT3 Acquire training in the use of new technologies and information and communication technologies.

CT5 Acquire essential notions of scientific thought.

Subject contents

1. Block 1 Fundamentals of inferential statistics

1.1. From descriptive statistics to inferential statistics. Introduction to the statistical software used in the subject.

1.2. Discrete and continuous probability distributions. Sample distribution.

1.3. Parameter estimation. Confidence intervals.

1.4. Hypothesis testing. Power and Sample Size Required in a Study.

1.5. Inferential statistics in scientific publications.

2. Block 2 Univariate inferential statistics.

2.1. Hypothesis tests with categorical variables such as RV and VI (2x2; RxC).

2.2. Hypothesis tests with quantitative variable as RV and dichotomous variable as VI.

2.3. Hypothesis tests with quantitative variable as RV and multinomial variable as VI.

2.4. Hypothesis tests with quantitative variables such as RV and VI.

3. Block 3 Multivariate inferential statistics.

3.1. Hypothesis testing with quantitative variable as RV and various multinomial variables as RV.

3.2. Hypothesis tests with quantitative variable as RV and various quantitative variables as VI.

3.3. What remains to be seen: Generalization of the General Linear Model. What to do when the RV distribution is not Normal, and when it is not Normal but the scores are correlated, and to know the existence of non-parametric Multivariate Models.

Methodology

- 1. Master classes based on reverse classroom. From practical necessity to theory.
- 2. Problem-based learning.
- 3. Use of software.
- 4. Non-contact activities.

Development plan

Formative activity

Hours allocated to the training activity (classroom 60/ Individual90)

Theoretical classes in person	26	20
Practical classes in person	26	15
Tutorials	4	5

Reading and analysis of texts	0	15
On-line activities	4	15
Study and preparation of evaluation tests	0	15
	60	90

Evaluation

Sistema d'avaluació

Sistema d'avaluació ordinària	% sobre nota	setmana
Activitats + Participació	10	
Prova Estimació paràmetres	25	S06
Prova Estadística Unifactorial	25	S11
Prova Estadística Multifactorial	40	S16 + REC S18
TOTAL	100	

L'aprobat s'obté obtenint 50 punts dels 100, amb condició de també obtenir el 40% dels punts a cada prova que superi el 30% del total dels punts

Sistema d'avaluació Alternativa	% sobre nota	setmana
Prova Distribucions + Estimació paràmetres	25	S16
Prova Estadística Unifactorial	25	S16
Prova Estadística Multifactorial	50	S16 + REC S18
TOTAL	100	

Les 2 proves "alternatives" 25%, caldrà fer-les en horaris no establerts al calendari oficial d'exàmens.

Bibliography

Recommended bibliography:

Navarro DJ and Foxcroft DR (2019). learning statistics with jamovi: a tutorial for psychology students and other beginners. (Version 0.70). DOI: 10.24384/hgc3-7p15

Miguel Ángel Martínez González (dir.), Almudena Sánchez Villegas (dir.), Estefanía Toledo Atucha (dir.), Francisco Javier Faulín Fajardo (dir.) Bioestadística amigable. Elsevier España. 2014 ISBN: 978-84-9022-500-4

<https://www.jamovi.org/>

Basic bibliography:

Zaiats V., Calle L., Presas, R. (1998) Probabilitat i estadística: exercicis I. Vic : Eumo. Només capítol 4

Zaiats V., Calle L. (2001) Probabilitat i estadística: exercicis II. Bellaterra : Universitat Autònoma de Barcelona. Tots els capítols (del 5 a 9)

Introductory bibliography:

Aron, A. i Aron, E.N. (2001) Estadística para Psicología. Buenos Aires: Pearson Educación,

Botella, J., León. D.G. & San Martín, R. (2001). Análisis de datos en psicología I. Madrid: Pirámide.

Domènech, J.M. y Granero, R. (2008). Anàlisi de dades en Psicologia per a la recerca en Psicologia. Vol. 1: Fonaments. Barcelona: Signo.

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Guàrdia, J.; Freixa, M.; Però, M. & Turbany, J. (2008). Análisis de Datos en Psicología (2ª Edición). Madrid: Delta.

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Spiegel, M. (2001). Teoría y problemas de probabilidad y estadística. México: McGraw-Hill.