UAB
Universitat Autònoma de Barcelona

2022/2023

Data Analysis

Code: 102571
ECTS Credits: 6

Degree	Type	Year	Semester
2502443 Psychology	OB	2	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

Other comments on languages

Practice groups 51 and 52: teaching in English, evidence statements in the principal working language of the subject. To request for translation of Ev2 & Ev4 into Spanish must be made in writing to the coordinator and no later than week 4.

Teachers

Albert Bonillo Martin

Alfredo Pardo Garrido

Diego Redolar Ripoll

Sonia Lorente Sanchez

Prerequisites

Students are assumed to have already passed the following course: "Methods, Designs and Research Techniques".

Objectives and Contextualisation

Data Analysis is the second methodological course of the syllabus of the Psychology degree and belongs to the subject Research Methods and Psychometrics. It is taught in the first semester of the second year and represents the continuation of the course Methods, Designs and Research Techniques, taught in the first year of the Psychology degree. The course integrates some of the methodological competences transferred from the Statistics subject and incorporates, and develops new ones, with the purpose of allowing the students to expand their competence base in preparation for the subsequent methodological courses.

Specifically, the objectives to be achieved are the following.

1. Familiarise students with the underlying conceptual foundations of the main statistical techniques used in answering the questions typically faced by Psychology practitioners and/or researchers.

2. Enable students to explain and correctly interpret the results obtained after applying the statistical techniques usually used and published in prestigious scientific journals.

3. Enable students to integrate the concepts developed in the framework of statistical thinking, as a formal structure of reasoning that facilitates the study of natural and psychological phenomena.

At the end of the course, the student must be able to do the following.

1. Reason within the framework of statistical thinking.
2. Know and correctly use the vocabulary of data analysis.
3. Understand the concept of uncertainty and probability in the field of psychological phenomenology.
4. Propose the statistical hypotheses correctly.
5. Identify the fundamental elements that define statistical inference.
6. Understand the type of reasoning implicit in the process of inferential statistics.
7. Analyse and understand the risk implicit in a statistical decision.
8. Decide which statistical technique is the most appropriate to test the statistical hypothesis.
9. Plan correctly the most appropriate analysis strategy in each of the problem situations posed.
10. Properly interpret the results obtained in a statistical analysis.

Competences

- Distinguish between the design of research, procedures and techniques to evaluate hypotheses, contrast them and interpret the results.

Learning Outcomes

1. Adequately interpret the results obtained from the application of univariable or bivariable statistical testing.
2. Evaluate and contrast models, instruments and techniques and decide which are the most appropriate for carrying out univariable or bivariable statistical analysis.
3. Identify the main models and techniques for univariable or bivariable statistical analysis and interpret the results obtained adequately.
4. Write up reasoned conclusions from the results obtained after applying univariable or bivariable statistical methods and techniques which offer an answer to a research hypothesis.

Content

1. Probability theory: fundamentals and diagnostic tests

2. Probability distributions

3. Statistical inference (I): estimation

4. Statistical inference (II): hypothesis testing

5. Inference with two categorical variables

6. Inference with a categorical and a quantitative variable: comparison of two means in independent samples

7. Inference with two quantitative variables: correlation model

8. Data analysis in repeated measurement designs

Methodology

The course Data Analysis counts for 6 ECTS credits that represent a total student workload of 150 hours. Of this total, 45 hours will be dedicated to training activities based on face-to-face lectures and practical sessions consisting of problem solving. A total of 18 hours will be devoted to reviewing problems in seminars and personal tutorials with the teachers. Various autonomous activities will be organized, which will involve 72 hours of student dedication, based on the reading of documents recommended by the teachers and cooperative learning (group resolution of cases and problem situations). The remaining nine hours to complete the course will be dedicated to evaluation activities.

To achieve the objectives of the course, the following taxonomy of activities will be used: (1) teaching methodology: formal lectures, supervised practical's, problem-based learning, and presentation / discussion of cases, and (2) educational activities: case studies and technical-scientific readings.

N.B. The proposed teaching and assessment methodologies may experience some modifications as a result of the restrictions on face-to-face learning imposed by the health authorities. The teaching staff will use the Moodle classroom or the usual communication channel to specify whether the different directed and assessment activities are to be carried out on site or online, as instructed by the Faculty.

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 classes	18	0.72	4, 3, 1, 2
Theoretical classes	27	1.08	4, 3, 1, 2
Type: Supervised			
Review of problems	10	0.4	4, 3, 1, 2
Tutorials	13	0.52	4, 3, 1, 2
Type: Autonomous			
Cooperative learning	33	1.32	4, 3, 1, 2
Reading scripts	45	1.8	4, 3, 1, 2

Assessment

The grading of students is based on a continuous evaluation process that allows the assessment of the degree to which they acquire the competencies of the subject. It is based on the delivery and completion of various learning evidences, associated with differentiated evaluation modalities at different times of the semester. This format provides students and teachers with immediate feedback on the level of competencies acquired throughout the course and the degree of improvement in academic performance.

To pass the course, students will have to demonstrate satisfactory performance in two mandatory tests (EV2 and EV4) of individual authorship and two instrumental or practical evaluation tests (EV1 and EV3) of group authorship.

The EV2 and EV4 tests are carried out in person at the place and date fixed by the Faculty in the first and second evaluation period respectively. These tests evaluate, by means of multiple-choice tests consisting of 40-45 questions, all the contents of the subject, considering both the theoretical and instrumental ones. EV2 evaluates topics 1 to 4 and EV4 evaluates the remaining topics (5 to 8).

Instrumental or practical evidence, EV1 and EV3, will be performed approximately one or two weeks before EV2 and EV4, respectively. The EV1 and EV3 consist of the exposition and subsequent resolution of a situation-problem that each work team (the members of which will be chosen at random by the professor at the beginning of the course within each group of practices) will have been working on during the course; in this sense, EV1 will evaluate the practical contents of topics 1 to 4 and EV3 those corresponding to topics 5 to 8. In order to be able to present each of these evidences, the team must have delivered 33% of the practical dossiers, that is, a minimum of one.

To determine the final grade of the course (FG), the weighted contributions of the respective learning evidences will be considered, in such a way that EV1 contributes 10% to the final grade of the course, EV2 35%, EV3 10%, and EV4 45%.Therefore: NF=EV1(0.10)+EV2(0.35)+EV3(0.10)+EV4(0.45). Students who have submitted evidence of learning with a weight equal to or higher than 4 points (40%) may not be recorded in the minutes as "not evaluable". In order to pass the subject through continuous assessment, the following criteria must be meet: 1) The weighted sum of all the evidence must be equal to or greater than 5 points. 2) The average of EV2 and EV4 should be 4.5 or higher (on a scale of 0 to 10); otherwise the maximum grade in the course will be 4.5. In accordance with the UAB regulations, students who have not passed the course and who meet: 1) have carried out evidence with a weight of at least 2/3 of the total and 2) have a continuous assessment mark 3.5 or higher, may be eligible for resit. The EV2 and/or EV4 can be recovered. The qualification of the recovered evidence will replace the previously obtained and the total qualification will be recalculated with the criteria aforementioned.

Students with a final grade higher or equal to 5 points will not be able to take the recovery test in order to increase the final grade obtained in the continuous evaluation.

The decision to make up one or both evidences (EV2 and/or EV4) is up to the student. The EV2 and EV4 make-up tests will have the same format and subject matter as the original tests. The grades obtained in the make-up tests will replace the grades initially obtained in the previous evaluations taken during the course (EV2and/or EV4).

Students who have obtaineda grade equal to or higher than 9 points will be eligible for the grade ofhonor. These students will have to take a complementary evaluation test of face-to-face and oral format. This test will take place at the same time as the recovery test.

The teaching team recommends that students of 2nd or subsequent enrollment who cannot easily follow the established continuous evaluation procedure, request the completion of a non-recoverable final synthesis test that includes the entire program. Students who wish to take this type of evaluation, and who meet the requirements (second or subsequent enrollment), must request it in writing (e-mail) to the course coordinator before the end of week 4.

In the link https://www.uab.cat/web/estudiar/graus/graus/avaluacions-1345722525858.html you can consult the guidelines for the evaluation of the degrees of the Faculty of Psychology 2022-23 and the criteria for the translation of assessment tests of the Faculty of Psychology.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Distinction-grade	Qualitative assessment	0	0	4, 3, 1, 2
EV1 Instrumental assessment units 1 to 4	10%	0	0	4, 3, 1, 2

EV2 Theoretical and instrumental assessment, units 1 to 4	35%	2	0.08	4, 3, 1, 2
EV3 Instrumental assessment, units 5 to 8	10%	0	0	4, 3, 1, 2
EV4 Theoretical and instrumental assessment, units 5 to 8	45%	2	0.08	4, 3, 1, 2

Bibliography

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Ellis, P.D. (2010). *The essential guide to effect sizes.* Cambridge: Cambridge University Press.

Kline, R.B. (2009). *Becoming a behavioral science researcher.* London: The Guilford Press.

Kline, R.B. (2013). *Beyond Significance Testing: Statistics Reform in the Behavioral Sciences.* Washington, DC: American Psychological Association.

Pardo, A., Ruiz, M.A., & San Martín, R. (2009). *Análisis de datos (I) en ciencias sociales y de la salud.* (2ª ed.). Madrid: Editorial Síntesis.

Pardo, A., Ruiz, M.A., & San Martín, R. (2010). *Análisis de datos (II) en ciencias sociales y de la salud.* (2ª ed.). Madrid: Editorial Síntesis.

Peña, D. (2001). *Fundamentos de estadística.* Madrid: Alianza Editorial.

Solanas, A., Salafranca, Ll., Fauquet, J., & Nuñez, M.I. (2005). *Estadística Descriptiva en Ciencias del Comportamiento.* Madrid: Thomson.

Urdan, T.C. (2022) (5º ed.). *Statistics in plain english.* New York: Routledge.

Software

The software used in the course is: (1) STATA program, a fundamental tool for a correct follow-up of the course, and (2) the JASP (https://jasp-stats.org/) and JAMOVI (https: // www .jamovi.org /), of a complementary nature, allow the student to delve into the contents presented in the theory sessions.