

Data Analysis

Code: 102571
ECTS Credits: 6

Degree	Type	Year	Semester
2502443 Psychology	OB	2	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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 Martín
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

Students' final grades are based on a continuous process that assesses the degree of acquisition of competences associated with the course. The evaluation process is based on the delivery of various evidences of learning, associated with different evaluation modes, at different times during the semester. This format provides students and teachers with immediate feedback on the level of skills acquired throughout the course and the degree of improvement in academic performance.

To pass the course, students must produce a satisfactory performance in two compulsory integrative tests (EV2 and EV4) taken individually, and two tests of instrumental or practical evaluation (EV1 and EV3) taken as a group. The integrative tests (EV2 and EV4) will be carried out in person at the date and place set by the Faculty, in the first and second evaluation period, respectively. The instrumental or practical evidences (EV1 and EV3) will be evaluated on the dates set in the schedule of the course. EV1 and EV3 consist of the

presentation and subsequent resolution of a situation-problem that each work team must prepare throughout the semester. In addition, a limited final test may be taken individually to opt for the Distinction grade; the characteristics of this test will be explained during the course.

The final grade of the course (FG) is determined by the weighted contributions of the respective learning evidences: $FG = EV1 (0.10) + EV2 (0.35) + EV3 (0.10) + EV4 (0.45)$. Therefore, EV1 contributes to the FG of the course by 10%, EV2 by 35%, EV3 by 10%, and EV4 by 45%. Students who have submitted evidence of learning with a weight equal to or greater than 4 points (40%) may not be listed in acts as "not assessable".

The grade will be considered passed if, having completed EV2 and EV4, the final grade (NF) is a) greater than or equal to 5 points and b) the average of EV2 and EV4 is equal to or greater than 4 points (always on a scale of 0-10). If a) is achieved but not b) the maximum grade for the course will be 4.0. If you have completed EV2 and EV4, the final grade is greater than or equal to 3.5 points but less than 5 points or the average of EV2 and EV4 is less than 4.5 points, you can choose to perform the recovery of EV2 and / or EV4. Students with a final grade greater than or equal to 5 points will not be able to take the resit test in order to increase the final grade obtained in the continuous assessment (AC).

The decision to recovery one or both evidences (EV2 and / or EV4) is of the student. The EV2 and EV4 recovery test (s) will have the same format and agenda as the original tests. The mark (s) obtained in the recovery test will replace the mark (s) obtained initially in the previous assessments carried out during the course (EV2 and/or EV4) and the final grade (NF) will be computed again.

Students with a final grade of less than 3.5 points will not be able to take the resit tests and their grade will be "fail".

Students who have obtained a grade equal to or higher than 9 points will be eligible for distinction-grade. These students will have to take a complementary assessment test, in person and in oral format. This test will be performed at the same time as the recovery test.

Students of 2^a or later enrollment, who do not follow the established continuous assessment procedure, will be able to request the performance of a non-recoverable synthesis test that will include the entire program. The student who wants to take advantage of this modality of evaluation, and that fulfills the requirements (second matriculation or later), will have to request it in writing (electronic post) to the coordinator of the course before the finalization of week 4.

On the following link: <https://www.uab.cat/web/estudiar/graus/graus/avaluacions-1345722525858.html> you can consult the evaluation guidelines of the degrees of the Psychology Faculty 2020-21.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Distinction-grade	Qualitative assessment	0	0	4, 3, 1, 2
EV1 Practical evaluation test	10%	0	0	4, 3, 1, 2
EV2 Integrative test	35%	2	0.08	4, 3, 1, 2
EV3 Practical evaluation test	10%	0	0	4, 3, 1, 2
EV4 Integrative test	45%	2	0.08	4, 3, 1, 2

Bibliography

Reference manuals (fundamental bibliography):

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

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

Complementary bibliography:

Cumming, G. i Jageman, C. (2016). *Introduction to the new statistics*. New York: Taylor & Francis.

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.

Peña, D. (2002). *Regresión y diseño de experimentos*. Madrid: Alianza Editorial.

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

Peró, M., Leiva, D., Guàrdia, J., i Solanas, A. (2012). *Estadística aplicada a las ciencias sociales mediante R y R-Commander*. Madrid: Garceta.

Solanas, A., Fauquet, J., Salafranca, Ll. i Núñez, M.I. (2005). *Estadística Descriptiva en Ciencias del Comportamiento*. Madrid: Internacional Thomson Editores.

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.