TEACHING GUIDE
Data Analysis en Psychology I

COURSE OUTLINE		
Name of the subject: Data analysis in Psychology I		
Module: Research methods, Design and Techniques in Psychology		
Code number: 202310107		**Curriculum year:** 2010
Type: Compulsory		**Academic year:** 2021-22
ECTS Credits: 6	**Course: 2**	**Semester:** *3*
Language of clases: English (DLEX TOT)		

TEACHING STAFF INFORMATION		
TEACHING STAFF:		
Name and surname: Carmen Diaz Batanero		
Department: Clinical and Experimental Psychology		
Knowledge area: Research methods in behavioral sciences		
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Office hours first semester:

Monday	Tuesday	Wednesday	Thursday	Friday
9.00 – 11.00h				
		11.00 – 14.00h		

Office hours second semester:

Monday	Tuesday	Wednesday	Thursday	Friday
9.00 – 11.00h				
		11.00 – 14.00h		

CLASSES HOURS

Monday	Tuesday	Wednesday	Thursday	Friday
		9.00 – 11.00h		
11.15 – 13.15h				

SUBJECT DESCRIPTION
PRE-REQUISITES AND RECOMENDATIONS: It is advisable for visiting students to simultaneously take the subject "Fundamentals of methodology in Psychology".
BASIC COMPETENCES: G.1: That student understand the knowledge that defines and articulate Psychology

as a scientific discipline, including its theories, methods and areas of application, at a level that is supported by advanced textbooks
G.2: Know how to apply this knowledge to professional work in the field of psychology identifying, assessing and solving the problems and demands that arise
G.3: Have the ability to gather and interpret relevant data related to the individual and social human behavior, and the context in which it occurs to make judgments
based on social, scientific and ethical criteria, on problems and situations of psychological nature
G.4: Being capable of transmitting information, ideas, problems and solutions about issues related to human behavior, to a public both specialized and not specialized

TRANSVERSE COMPETENCES:

TC1. Manage the acquired information adequately showing advanced knowledge in a scientific and technological research or highly specialized context and demonstrating a detailed and well-founded understanding of theoretical and practical aspects and of the work methodology in the field.

TC2. Master the academic and professional project with enough autonomy to participate in research projects and scientific or technological collaborations within its thematic area, in interdisciplinary contexts and in some cases with a high component of knowledge transfer

LEARNING OUTCOMES:
The aim of the course is to introduce the student to the use of some of the conceptual and methodological tools necessary for the analysis of the results of research in psychology.
On completion of this course, the student will be able to:

- Understand how to describe different types of data graphically and statistically.
- Know and understand the basic concepts of data analysis
- Know some statistical analysis techniques and their suitability depending on the type of variables analized and the aim of the scientific problem posed
- understand the purpose of, and to be able to compute and interpret, simple statistical tests using statistical software.

TEACHING METHODOLOGY

Learning and teaching activities	Hours	Presence percentage
Lecture hours	33	100%
Supervised practical workshop	12	100%
Independent learning hours	105	0%

Attendance to classes is not compulsory, although recommended. In addition to theoretical classes, in which the contents will be presented, practical classes will be focused on problem solving and development of methodological / statistical analysis of empirical data using statistical software (SPSS/ JASP).

A series of activities are proposed with the aim of facilitating student learning:

1. Exercises and problems, some of which will be done in class and others will be proposed to do in the hours of autonomous work.
2. Individual evaluation. Throughout the course, two individual tests/tasks to assess students' knowledge and skills will be done
3. Research work project. Student will carry out a group work, in which they will have to collect/search data, organize it into a database, analyze them with statistical software, prepare a written report in APA format.

Carrying out the proposed activities is not mandatory either, although it is also recommended for a better use of the subject.

The instructor of the subject will make an exposition of the theoretical content of the topics in the theoretical classes. Along with this theoretical exposition, exercises will also be carried out to promote the learning of the exposed concepts.

The practice classes will be held in the classroom and, if possible, in the computer rooms at Campus del Carmen. In each class the teacher will initially present the aims of the activity. Students must use statistical software to solve the tasks. At all times the teacher will support those students who have doubts about the resolution of the proposed tasks. Activities will end with an analysis of the results obtained in order to strengthen the tools used and applied statistical concepts

Students will be able to meet with the instructor, in her office, to clarify doubts or request additional guidance.

CONTENTS

SECTION 1. INTRODUCTION

1. STATISTICS IN PSYCHOLOGY. Introduction to research design. Independent/dependent variables. Introduction to psychological measurement. Measurement scales. Descriptive and inferential statistic. Population, sample, parameters and statistics.

SECTION 2. DESCRIBING A SINGLE VARIABLE

2. FREQUENCY DISTRIBUTIONS AND GRAPHS. Organizing and summarizing data. Getting started with data bases. Frequency tables. Graphical representations: Pie chart, bar chart, histograms, boxplots.
3. MEASURES OF CENTRAL TENDENCY, VARIABILITY, SKEW AND KURTOSIS. Measures of central tendency: mean, median, mode. Measures of variability: range, variance, standard deviation. Skew and kurtosis.
4. STANDARIZED SCORES AND NORMAL DISTRIBUTION. Measures of position: percentiles. Z scores and their properties. The normal distribution

SECTION 3. BIVARIATE DESCRIPTIVE DATA ANALYSIS

5. ANALYSIS OF THE RELATIONSHIP BETWEEN TWO CATEGORICAL VARIABLES. Joint frequency distributions. Contingency tables. Effect size measures (Cramer's V, contingency coefficient)
6. ANALYSIS OF THE RELATIONSHIP BETWEEN TWO CUANTITAVE VARIABLES. Correlation. Representing correlation graphically: scatterplots. Correlation and does not imply causation. Introduction to statistical prediction and regression.
7. ANALYSIS OF THE RELATIONSHIP BETWEEN ONE CATEGORIC VARIABLES AND ONE CUANTITATIVE VARIABLE. Graphical representations. Effect size

measures: Cohen's d, eta square.

SECTION 4. INTRODUCTION TO STATISTICAL INFERENCE

8. FOUNDATIONS FOR INFERENCE. Hypothesis testing and parameter estimation. Statistical significance vs practical significance and effect size.
9. MAIN INFERENTIAL TECHNIQUES FOR BIVARIATE ANALYSIS. Independent and paired T-test. ANOVA. Correlation and regression. Chi-square.

BIBLIOGRAPHY

Cohen, B.H. (2013). *Explaining psychological statistics*. New Yersey: John Wiley & Sons

Crump, M. (2018). Answering Questions with Data: Introductory Statistics for Psychology Students. New York, New York: Crump Lab.

Geher, G., & Hall, S. (2014). Straightforward Statistics : Understanding the Tools of Research. New York, New York: Oxford University Press

Goss-Sampson, M. A. (2020). Statistical Analysis in JASP 0.14: A Guide for Students. Available online: https://jasp-stats.org/jasp-materials/

Welkowitz, J., Cohen, B.H. and Brooke, LR. (2011) Introductory Statistics for the Behavioral Sciences. Aufl. Hoboken: Wiley.

Recommended websites:

- ARTIST. Assessment Resource Tools for Improving Statistical Thinking. https://apps3.cehd.umn.edu/artist/
- CAUSEweb. Consortium for the Advancement of Undergraduate Statistics Education. http://www.causeweb.org/

The online learning platform Moodle will include appropriate support and guidance material for the lessons

ASSESSMENT

Successful completion of the course requires achieving a minimum score of 2 in the Final Exam and that the sum of Final Exam + Other activities be greater than or equal to 5. Different assessments activities are outlined below:

* Final exam 50% (0-5 points). The exam will be 2 hours long and will assess your theoretical understanding of the material as well as your ability to solve problems. The exam will consist of 30 multiple-choice questions with two / three answer options. Errors do not penalize the score. Scoring: Up to 10 correct answers: 0 points. From the 11th correct answer: 0.25 points per correct answer.

Materials: the student should bring a calculator and a pen. Necessary formulas to complete the exam will be provided.

The exam date (to be confirmed) will be published on the website: https://www.uhu.es/fedu/?q=iacademica-grapsic&op=horarios.

* Other activities 50%: Include the following activities:

- *Two individual tasks*: (0 - 1.5 each one) There will be two tasks with questions related to the material proposed in class. These tests do not eliminate content, so the final exam will include all the content from the course.
- *Project*: (0 – 2) The goal of the project is to help you to integrate

learning into the real world of data analysis. The result of this work will be a research report in APA format. Guidelines with the requirements for the project will be given.

Final results will be given in terms of a numerical scale between 0 and 10 (including), with the corresponding qualitative ratings below:

- ≤4.9: Fail (D)
- 5.0 - 6.9: Pass (C)
- 7.0 - 8.9: Pass with Merit (B)
- 9.0 - 10: Distinction (A)

The total number of summa cum laude ('Matrícula de Honor') cannot exceed 5% of the students enrolled in the subject in the academic year (unless the number of students enrolled is lower to 20, in which case one distinction can be awarded).