

1. BASIC INFORMATION

Course	APPLIED STATISTICS IN PSYCHOLOGY
Degree program	Psychology Degree
School	Biomedical and Health Sciences
Year	First Year
ECTS	6
Credit type	Basic
Language(s)	English
Delivery mode	Campus-based
Semester	S2
Academic year	2025/2026
Coordinating professor	Alejandro García Pardina
Professor	Alejandro García Pardina, Víctor Estal, and Allyah Hassell

2. PRESENTATION

APPLIED STATISTICS IN PSYCHOLOGY is taught in the second semester of the first year of the bachelor's degree in psychology.

This course is the first one in the degree that explicitly addresses the methodological branch of Psychology. Students will develop an informed scientific criterion on how to acquire knowledge in Psychology using a methodological approach. Students will also learn about fundamentals and applications of the main statistical models for analyzing data in the field.

Further courses in the degree (RESEARCH METHODS and PSYCHOMETRICS) will build upon the contents of this course.

3. LEARNING OUTCOMES

Knowledge

KN06. Identify the methodology of the most frequently used types and designs of studies in research.

- Describe basic concepts about research designs and variable classification.
- Define the mathematical and methodological principles of inferential statistics.

Skills

SK08: Analyze the different phases for the design and implementation of a research project, from planning and designing research in the field of Psychology.

- Analyze fundamental statistical models for relating variables (covariance, correlation, and regression).
- Analyze fundamental statistical models for comparing variables (z-test and t-tests).

- Calculate the main descriptive statistics (graphs and numerical measures).
- Apply the logic of hypothesis testing.

Competences

COMP02: Understand the basic laws of different psychological processes in the field of Health Psychology.

COMP04: Understand the biological foundations of human behavior and psychological functions.

COMP05: Understand the psychosocial principles of group and organizational functioning.

COMP08: Understand different research designs, hypothesis formulation and testing procedures, and the interpretation of results, and be able to apply them in the field of Health Psychology.

COMP13: Be able to describe and measure variables (personality, intelligence, and other abilities, attitudes, etc.) and cognitive, emotional, psychobiological, and behavioral processes.

COMP14: Be able to identify differences, problems, and needs.

COMP15: Be able to diagnose following the profession's criteria.

COMP21: Know how to select and manage instruments, products, and services, and be able to identify interested individuals and groups.

COMP22: Know how to design and adapt instruments, products, and services according to requirements and restrictions.

COMP23: Know how to test and validate instruments, products, and services (prototypes or pilot tests).

COMP34: Know how to provide feedback to recipients in an appropriate and precise manner.

COMP35: Be able to prepare oral and written reports.

4. CONTENT

The subject is organized into six learning units:

UNIT 1: Introduction to Statistics

- General concepts
- Variables: classification and notation
- Summation

UNIT 2: Descriptive statistics

- Frequency distribution
- Percentiles
- Centrality measures (average, median, mode)
- Variability measures (variance, standard deviation)
- Standard score and transformed scales

UNIT 3: Covariance and Correlation

- Graphical representation of a linear relationship
- Quantification of a linear relationship
- Assessment and interpretation of a linear relationship
- Correlation matrix

UNIT 4: Foundations of Inferential Statistics

- Hypothesis formulation
- Hypothesis testing
- Assumptions of the model

UNIT 5: Linear Regression

- Linear functions
- Simple Linear Regression

UNIT 6: Other statistics

- Mean difference
- Distribution differences

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Case analysis
- Student presentations
- Problem-based learning
- Lectures
- Use of Software

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Learning activity	Number of hours
Practical exercises	20h
Debates	10h
Lectures	13h
Asynchronous lectures	7h
Self-study	50h
Case studies	10h
Problem solving	20h
Formative assessments	3h
Test of knowledge	2h
Research	10h
Tutorials	5h
TOTAL	150h

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Assessment system	Weight
Knowledge test: 30 multiple-choice questions with 3 answer options each.	50%
Case analysis and problem solving: <ul style="list-style-type: none"> - Case analysis carried out with JASP: 10% - OSRE (Observed Structured Research Evaluation) objective instrument for assessment of statistical practical competencies: 5% 	15%
Reports and writings: practical activity based on data analysis done in coordination with the Memory and Learning Processes course as part of an integrated curriculum activity	15%
Learning folder (Portfolio): collection of practical activities done in class.	10%
Poster: practical activity based on data analysis done in coordination with the Physiology, and Sensation, Perception and Attention courses as part of an integrated curriculum activity	10%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

Attendance

According to Art. 1.4 of the Regulation for the Evaluation of Official Degree Degrees of the European University of Madrid (of the continuous evaluation): "The obligation to justify at least 50% attendance at classes is established as part of necessary for the evaluation process and to comply with the student's right to receive advice, assistance and academic follow-up from the teacher. For these purposes, students must use the technological system that the University puts at their disposal, to accredit their daily attendance to each of their classes. This system will also serve to guarantee objective information on the active role of the student in the classroom.

Those students who have not achieved a 50% attendance rate in the first exam period may be graded as failing and must pass the corresponding objective exams in the second exam period for the subject, where they must obtain a grade equal to or higher than 5.0 out of 10.

7.1. First exam period

To pass the course in the first exam period, the student must meet all 4 criteria:

- Obtain a grade of, at least, 5.0 out of 10.0 in the final grade (weighted average) of the course.
- Obtain a grade of, at least, 5.0 out of 10.0 in the exam (In-person test of knowledge).
- Undertake the OSRE.
- Obtain a grade of, at least, 5.0 out of 10.0 in the weighted average of the practical activities (Learning folder, Reports and writings, Case analysis and problem solving, and Poster).

PLAGIARISM AND USE OF IA

Any student who resorts to or uses illicit means during an evaluation test, or who improperly claims authorship of academic work required for assessment, will receive a failing grade ("0") in all evaluation tests for the exam period in said subject in which the violation occurred, and may also face disciplinary action following the opening of a disciplinary proceeding.

AI-Generated content: AI-generated content tools (AIGC), such as ChatGPT and other language models (LLMs), cannot be used to generate assignments. These tools also cannot be responsible for any written content in the assignment. The use of AI must be authorized by the instructor for each activity. If a student has used these tools to develop any part of their work, this use must be detailed in the assignment. The student is fully responsible for the accuracy of the information provided by the tool and for correctly referencing any supporting work. Tools used for spelling, grammar, and general editing are not included in these guidelines. The final decision on the appropriateness of the reported use of an AI tool rests with the instructor, academic coordination, and program director.

DELAYED SUBMISSION OF MANDATORY ACTIVITIES

Late submissions of mandatory assignments will result in the activity not being graded, and a numerical grade of 0 will be assigned.

7.2. Second exam period

To pass the course in the second exam period, the same requirements as in the first exam period must be met. The student must submit the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not submitted in the first place. To pass the course in the first exam period, the student must meet all 4 criteria:

- Obtain a grade of, at least, 5.0 out of 10.0 in the final grade (weighted average) of the course.
- Obtain a grade of, at least, 5.0 out of 10.0 in the exam (In-person test of knowledge).
- Undertake the OSRE.
- Obtain a grade of, at least, 5.0 out of 10.0 in the weighted average of the practical activities (Learning folder, Reports and writings, Case analysis and problem solving, and Poster).

All the practical activities (Reports and writing, Learning folder and Poster) will be reassessed in the second exam period under the same instructions than in the first exam period, except for the Case analysis and problem-solving section, in which a new Case Analysis will be available for students who did not pass the practical activities section. This activity will include similar exercises (in content and complexity) to those found in the Case Analysis and problem-solving activities of the ordinary call.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
Case analysis 1	3 rd week of March

Report	3 rd week of May
Poster	3 rd week of May
Learning folder (portfolio)	4 th week of May
OSRE (Observed Structured Research Evaluation)	4 th week of May
Test of knowledge	4 th week of May

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

9. BIBLIOGRAPHY

- Ruiz, M., Pardo, A. & San Martín, R. (2009). *Análisis de datos en ciencias sociales y de la salud I*. Síntesis Editorial.
- Pardo, A., San Martín, R., (2010). *Análisis de datos en ciencias sociales y de la salud II*. Síntesis Editorial.
- Goss-Sampson, M. A. (2024). *Statistical Analysis in JASP 0.18.3: A Guide for Students*. March 2024.
- Navarro, D. J., Foxcroft D. R. and Faulkenberry, T. J. (2019). *Learning statistics with JASP: A tutorial for psychology students and other beginners*.
- Navarro, D. (2015). *Learning statistics with R*.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at: orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section on virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.