

## 1. BASIC INFORMATION

Course	PSICOMETRÍA
Degree program	Degree in Psychology
School	Biomedical and Health Sciences
Year	3
ECTS	6
Credit type	Mandatory
Language(s)	English
Delivery mode	Campus-based
Semester	1
Academic year	2025/2026
Coordinating professor	Eduardo Polín Alía
Professor	Alejandro García Pardina

## 2. PRESENTATION

Psychometrics is a compulsory subject within the Psychology degree program, taken in the third year and carries a value of 6 ECTS credits. The significance of this course within the curriculum lies in its scientific and technical component, as it provides essential knowledge for analyzing and interpreting the reliability and validity metrics of psychological measurement instruments.

The professional practice of Psychology, similar to other fields within Health Sciences, requires technical expertise to accurately convey information regarding psychological tests. Moreover, psychological diagnosis and assessment, when approached from a scientific perspective, demand familiarity with specific psychometric analysis techniques.

Through this course, students will acquire specialized knowledge in psychological measurement by engaging in practical activities, oral presentations, and technical reports. Additionally, they will be introduced to psychometric data analysis using metrics and procedures grounded in scientific psychology.

## 3. LEARNING OUTCOMES

### • KNOWLEDGE

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

- Describe the history of psychometrics.

- Identify the main psychometric properties (reliability, validity, and item analysis).

- **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.

- Create a scale to measure a psychological construct from scratch and then administer it.
- Analyze the psychometric properties of the created scale.
- Handle specific statistical software (JASP).
- Plan a research study in psychology and understand the implications of rigorously following the phases of test construction.

- **COMPETENCES**

CP02: Understand the basic laws of different psychological processes in the field of Health Psychology.

CP03: Understand the main processes and stages of psychological development throughout the lifespan, in terms of normality and abnormality, in the field of Health Psychology.

CP04: Understand the biological foundations of human behavior and psychological functions.

CP05: Understand the psychosocial principles of group and organizational functioning.

CP08: Understand different research designs, hypothesis formulation and testing procedures, interpretation of results, and be able to apply them in the field of Health Psychology.

CP13: Be able to describe and measure variables (personality, intelligence and other abilities, attitudes, etc.) and cognitive, emotional, psychobiological, and behavioral processes.

CP14: Be able to identify differences, problems, and needs.

CP17: Be able to identify group and intergroup problems and needs.

CP18: Be able to describe and measure interaction processes, organizational dynamics, and organizational and inter-organizational structures.

CP21: Be able to select and manage instruments, products, and services and identify interested individuals and groups.

CP22: Be able to design and adapt instruments, products, and services according to requirements and constraints.

CP23: Be able to test and validate instruments, products, and services (prototypes or pilot tests).

## 4. CONTENT

1. Introduction to Psychometrics and to measurement in psychology
2. Fundamentals of Psychological Assessment Systems. Scaling.
3. Statistical Fundamentals: Test Manuals
4. Test construction and item analysis
5. Reliability and validity
6. Factorial analysis
7. Item Response Theory

## 5. TEACHING-LEARNING METHODOLOGIES

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

- Case method
- Oral presentations
- Problem-based learning (PBL)
- Lectures
- Use of computer programs

## 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 activities	20 h
Debates	10 h
Lectures	10 h
Asynchronous lectures	10h
Autonomous work	50 h
Case analysis	20 h
Problem solving	10 h
Formative assessment	3 h
Face-to-face knowledge tests	2h
Research	10 h
Tutorials	5 h

<b>TOTAL</b>	<b>150 h</b>
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## 7. ASSESSMENT

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

Assessment system	Weight
In-person knowledge test: 30 multiple-choice questions with 3 answer options each.	50 %
Research work report: submission of a scientific report focused on the validation of a psychological test.	20 %
Reports and writings: submission of 3 reports on course content (Important concepts and authors in psychometrics; introduction to the measurement process; introduction to item test theory)	15 %
Case analysis and problem solving: submission of 1 case analysis conducted on JASP (related to reliability and validity) and 1 OSRE (Observed Structured Research Evaluation) scenario (a practical examination in which students are required to conduct and interpret analyses on a dataset derived from a psychometric test.).	10 %
Oral presentations: presentation of the results from the Research work report.	5 %

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. The assessment activities that are not completed will be graded as 0.

### 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 subject in the first exam period, you must obtain a minimum grade of 5.0 out of 10.0 in the final grade (weighted average) of the subject.

Likewise, you must attend in person to complete the OSRE assessment.

Additionally, you must obtain a grade of 5 or higher out of 10 in:

- the knowledge test (final exam).

- the final research report for the subject (weighted average of the research paper 20% and oral presentation 5%). The oral presentation of the paper is mandatory to pass the subject.

#### PLAGIARISM AND USE OF AI

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 (AIGC) tools, such as ChatGPT and other large language models (LLMs), cannot be used to generate work. These tools cannot be responsible in any case for the content written 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, their use must be described in detail in the work. The student is entirely responsible for the accuracy of the information provided by the tool and for properly referencing any supporting work. Tools used for improving 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 lies with the instructor, academic coordination, and program management.

#### 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 subject in the special examination session, the same guidelines as in the regular session will be followed. It is necessary to submit the activities not passed in the regular session, after having received the corresponding corrections from the professor, or those that were not submitted.

Likewise, if you did not attend the OSRE assessment in person during the regular session, you must do so during the extraordinary session.

To pass the subject in the special examination session, you must obtain a minimum grade of 5.0 out of 10.0 in the final grade (weighted average) of the subject. Additionally, you must obtain a grade of 5 or higher out of 10 in:

- the knowledge test (final exam).
- the final research paper for the subject (weighted average of the research paper 20% and oral presentation 5%). The oral presentation of the paper is mandatory to pass the subject.

## 8. SCHEDULE

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

Assessable activities	Deadline
Lectures	Week 1-15
Reports and writings. Practical lecture. Class exercises.	Weeks 3-5, 6-8, 9-10
Case analysis and problem-solving (practical assignments for independent work)	Weeks 11-12 Weeks 13-14

Research project	Week 3-18
Oral presentation	Week 15
In-person knowledge test	Week 16-18
Case analysis and problem-solving: OSRE (Observed Structured Research Evaluation)	Week 16-18

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

The main reference work for this subject is:

- Abad, F.J., Olea J., Ponsoda, V., García, C. (2011). *Medición en ciencias sociales y de la salud*. Editorial Síntesis.
- Furr, R. M., & Bacharach, V. R. (2013). *Psychometrics: an introduction*. Sage.

The recommended Bibliography is:

- Anastasi, A., & Urbina, S. (1997). *Psychological testing*. Prentice-Hall.
- Kline, P. (2014). *An easy guide to factor analysis*. Routledge.
- Kline, P. (2014). *The new psychometrics: Science, psychology and measurement*. Routledge.
- Kline, P. (2013). *Handbook of psychological testing*. Routledge.
- Nunnally, J. C., Bernstein, I. H., & Berge, J. M. T. (1967). *Psychometric theory* (Vol. 226). New York: McGraw-Hill.
- Bech, P. (2012). *Clinical psychometrics*. John Wiley & Sons.
- Rust, J. & Golombok, S. (2014). *Modern psychometrics: The science of psychological assessment*. Psychology Press.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association.

## 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 mean 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 opportunity 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](mailto: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.