

## 1. BASIC INFORMATION

<b>Course</b>	Research Methodology
<b>Degree program</b>	Bachelor's Degree in Physical Activity and Sport Sciences
<b>School</b>	School of Sport Sciences and Physical Activity
<b>Year</b>	Second year
<b>ECTS</b>	6
<b>Credit type</b>	Basic
<b>Language(s)</b>	English
<b>Delivery mode</b>	Campus-based and online
<b>Semester</b>	S4
<b>Academic year</b>	2025-2026
<b>Coordinating professor</b>	Iyán Iván Baragaño

## 2. PRESENTATION

In this subject, the student will acquire the knowledge, skills, and basic competencies associated with the scientific method and data analysis in the Physical Activity and Sports Sciences. The subject will cover the different phases of the scientific method, from searching for scientific articles in reliable sources to mastering different techniques and tools for data analysis with direct application to the field of study. Upon completion of the subject, students will be able to analyze, understand, and apply the knowledge and conclusions obtained in each of the units of the subject, from a critical perspective and applied to the professional reality they will face.

## 3. LEARNING OUTCOMES

### Knowledge

KNO6: Defines fundamental concepts related to scientific evidence in physical activity and sport.

- Identifies key concepts related to statistical and research techniques.
- Describes the statistical results of small-scale empirical studies in the various areas of physical activity and sport.
- Interprets results in order to reach conclusions about small-scale empirical studies in the various areas of physical activity and sport.

### Skills

AB4: Interprets research reports and documentation on physical activities and sports.

- Develops research skills in observing, questioning, recording field notes, experimenting, interpreting data and writing.
- Carries out an in-depth study and synthesis based on research using fundamental bibliographic sources related to physical activity and sport sciences.
- Manages software applications for data analysis and interpretation in the various areas of physical activity and sport.

### Competences

- Comp24. Identify, describe and analyse the fundamental components of scientific methodology.
- Comp25: Analyse, review and single out the purpose and effectiveness of methods, techniques and resources for scientific research and methodology, in respect of problems whose resolution requires the use of creative and innovative ideas.
- Comp26. Adopt a rigorous and scientific approach to develop and draw on the justification needed to produce, support, defend and justify, in a consistent and professional manner, all acts, decisions, processes, procedures, initiatives, activities, tasks, conclusions, reports and professional performance.
- Comp38. Digital competence. Use information and communication technologies to search for and analyze data, research, communicate and learn.
- Comp41. Critical analysis. Integrate analysis with critical thinking in a process of evaluating different ideas or professional possibilities and their potential for error, based on evidence and objective data that lead to effective and valid decision-making.
- Comp42. Resilience. Adapt to adverse, unexpected situations that cause stress, whether personal or professional, overcoming them and even turning them into opportunities for positive change.

## 4. CONTENT

- Topic 1. Research and documentation methods.
- Topic 2. Introduction to statistics
- Topic 3. Descriptive statistics.
- Topic 4. Two-dimensional distributions, covariance, correlation, regression, model assessment, probability: basic concepts, probability distributions and sampling distribution.
- Topic 5. Building confidence intervals, parameter estimation, hypothesis testing and types of error.
- Topic 6. Tests to analyse the relationship between variables, tests to analyse the difference between variables/groups, and the management of software applications in inferential statistics.

## 5. TEACHING-LEARNING METHODOLOGIES

Below are the types of teaching-learning methodologies that will be applied:

- Lecture
- Simulation
- Problem-based learning
- Learning based on workshops/lab techniques
- Project-learning

## 6. LEARNING ACTIVITIES

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

### Campus-based mode:

Training activity	Hours
Lectures	12
Practical application classes	18
Self-study	56
Debates	8
Tutoring	12
Face-to-face evaluation tests	4
Workshops and laboratory activities	12
Problem solving	10
Report writing	8
Research and projects	10
<b>TOTAL</b>	<b>150</b>

### Online mode:

Training activity	Hours
Synchronous virtual lectures	10
Synchronous virtual practical application classes	20
Problem solving	10
Report writing	11
Research and projects	13

Workshop and/or laboratory activities	6
Self-study	56
Synchronous virtual academic tutoring	12
Virtual forum	8
Face-to-face evaluation tests	4
<b>TOTAL</b>	<b>150</b>

## 7. ASSESSMENT

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

### Campus-based mode:

Assessment system	Weight
Face-to-face evaluation tests	40-50%
Case/problem	10-20%
Research and projects	10-20%
Workshop-laboratory practice notebook	10-20%
Reports and writings	5-15%

### Online mode:

Assessment system	Weight
Face-to-face evaluation tests	40-50%
Case/problem	10-20%
Research and projects	10-20%
Workshop-laboratory practice notebook	10-20%
Reports and writings	5-15%

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..

### 7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

## 7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

## 8. SCHEDULE

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

Assessment activities	Deadline
Research and projects	Week 3, 6, 14
Face-to-face evaluation test (1)	Week 8
Reports and writings	Week 12
Workshop-laboratory practice notebook	Week 15
Face-to-face evaluation test (2)	Week 16

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:

- Barriopedro, M. I. & Muniesa, C. (2012). *Análisis de datos en las ciencias de la actividad física y del deporte*. Pirámide.
- Acosta, R. (2005). *Gestión y administración de organizaciones deportivas*. Paidotribo.

- Biblioteca Dulce Chacón. (s.f.): Gestión bibliográfica. Recuperado el 21 de julio de 2022 de <https://web-uem.bibliocrai.universidadeuropea.com/buscar-informacion-sobre/gestion-bibliografica>
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- Desenti, J. T. & Rosenberg D. (1995). *Ethics in Sport Management*. Bookcrafters.
- Griffith, A. (2010). *SPSS for dummies (2nd ed.)*. Wiley Publishing.
- Jiménez Villa, J., Argimón Pallàs, J. M., Martín Zurro, A. & Villardell Tarrès, M. (2015). *Publicación científica biomédica: cómo escribir y publicar un artículo de investigación (2nd ed.)*. Elsevier.
- Martín Andrés, A. & Luna del Castillo, J. D. (2004). *Bioestadística para las Ciencias de la Salud (+) (5th ed.)*. Norma-Capitel.
- Martínez González, M. A., Sánchez Villegas, A., Toledo Alucha, E. A. & Faulin Fajardo, J. (2014). *Bioestadística amigable (3rd ed.)*. Elsevier.
- Newel, J., Aitchison, T. & Grant, S. (2010). *Statistics for sports and exercise science: a practical approach*. Pearson Education.
- Rumsey, D. J. (2013). *Estadística para dummies*. Planeta.

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- Alcaide, A. & Arenales, C. (1992). *Estadística, introducción (3rd ed.)*. Universidad Nacional de Educación a Distancia.
- Bunge, M. (1969). *La investigación científica*. Ariel.
- Coll, S. & Guijarro, M. (1998). *Estadística aplicada a la historia y a las ciencias sociales*. Pirámide.
- Harris, M. & Taylor, G. (2003). *Medical statistics made easy*. INFRMA-HC.
- Kuhn, T. S. (1987). *La estructura de las revoluciones científicas*. Fondo de Cultura Económica.
- Peña, D. (1987). *Estadística: Modelos y métodos*. Alianza Editorial.
- Popper, K. R. (1997). *La lógica de la investigación científica*. Tecnos.
- San Martín, R. & Pardo, A. (1989). *Psicoestadística: contrastes paramétricos y no paramétricos*. Pirámide.
- San Martín, R., Espinosa, L. & Fernández, L. (1986). *Psicoestadística descriptiva*. Pirámide.
- San Martín, R., Espinosa, L. & Fernández, L. (1987). *Psicoestadística: estimación y contraste*. Pirámide.
- Spiegel, M. (1991). *Estadística (2n ed.)*. McGraw-Hill.

## 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](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 in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.