

**COURSE DATA****DATA SUBJECT**

Code: 44634
Name: Statistics, methodology and advanced clinical reasoning
Cycle: Master's Degree / Doctorate
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

| Degree | Center | Acad. year | Period |
|--|--------------------------|------------|---------------|
| 2220 - Master's Degree in Functional Recovery in Physiotherapy | Facultat de Fisioteràpia | 1 | First quarter |

SUBJECT-MATTER

| Degree | Subject-matter | Character |
|--|---|------------|
| 2220 - Master's Degree in Functional Recovery in Physiotherapy | Statistics, methodology and advanced clinical reasoning | COMPULSORY |

COORDINATION

INGLES DE LA TORRE MARTA

MORENO SEGURA NOEMI

SUMMARY

This subject related to research and scientific field but with a marked clinical application, in order to enhance self-learning ability and proper integration between scientific evidence and clinical evidence contents are addressed.

The course is divided into three sections:

- 1- Methodology and scientific documentation. Critical reading.
- 2- Statistics applied to the clinical setting.
- 3- Clinical reasoning quality.

PREVIOUS KNOWLEDGE**RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**



There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

2220 - Master's Degree in Functional Recovery in Physiotherapy

Acquire sufficient scientific methodology to develop research projects in the field of functional recovery.

Adquirir metodologías de investigación y de evaluación específicas que permitan el diseño de un trabajo de investigación y su ejecución.

Aplicar en un entorno clínico específico la estadística descriptiva e inferencial.

Be able to correctly apply the various evidence-based methodologies available in the treatment of the pathologies and injuries in question

Conocer la estadística multifactorial y su aplicación en los proyectos de investigación y en la interpretación clínica de los resultados.

Develop the ability to perform appropriate clinical reasoning based on reviewed, analyzed, and critically reflected clinical-scientific evidence, with the appropriate level of specialization

Profundizar en la utilización de las fuentes de información bibliográfica y la metodología para la recuperación de información científica.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

Students should possess and understand foundational knowledge that enables original thinking and research in the field.

To promote, in academic and professional contexts in the field of economic policy, technological, social or cultural advancement within a society based on knowledge and respect for: a) fundamental rights and equal opportunities between men and women, b) the principles of equal opportunities and universal accessibility for people with disabilities and c) the values $\zeta\zeta$ of a culture of peace and democratic values.

DESCRIPTION OF CONTENTS



1. Scientific methodology and documentation. Critical Reading

This block addresses the following aspects: methodology for bibliographic and documentary research, design and structure of scientific work, the process of publication and participation in scientific meetings, evaluation of scientific activity through bibliometric studies.

In addition, the student is assisted in the planning of a research work design (i.e. his master's degree job), under the prism of evidence-based physiotherapy.

2. Statistics in the clinical setting

a. Descriptive statistics: mean, standard deviation, and frequencies to describe samples. Frequent errors in data (standard error, confidence interval, and outliers). Data representation graphs.

b. Inferential statistics: relationship between qualitative variables (chi-square) and quantitative variables (simple and multiple linear correlations). Difference of means and analysis of variance. Importance of covariates in multifactorial studies (ANCOVA) due to their contribution to the final results.

c. Multifactorial statistics. Data reduction and questionnaire construction (Cronbach's alpha). Reliability, repeatability, and validity.

3. Clinical intervention methodology and clinical reasoning.

Clinical reasoning theory.

Models of clinical reasoning.

Existence of bias in clinical reasoning.

Biomedical aspects involved in clinical reasoning.

Causal relationships in complex systems.

Establishing the relevance of clinical findings.

WORKLOAD

PRESENCIAL ACTIVITIES

| Activity | Hours |
|-----------------------------|--------------|
| Theory | 10,00 |
| Computer classroom practice | 16,00 |
| Classroom practices | 10,00 |
| Total hours | 36,00 |

NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|--------------------------------|-------|
| Attendance at other activities | 5,00 |
| Individual or group project | 0,00 |



| | |
|---------------------------------------|---------------|
| Independent study and work | 74,00 |
| Preparation of lessons | 0,00 |
| Preparation for assessment activities | 35,00 |
| Resolution of case studies | 0,00 |
| Total hours | 114,00 |

TEACHING METHODOLOGY

1. Theoretical-practical face-to-face classes in which the contents of the subject will be worked on. In addition, discussion sessions and activities will be carried out by using different teaching resources.
2. Individual and group works of a cooperative nature.
3. Individual and group tutorials to coordinate students in individual and group tasks.

EVALUATION

The final grade of the subject will be the weighted sum of the marks obtained in each evaluation test, as long as the student has obtained at least 50% of the maximum mark in each of the tests.

| Evaluation system | Percentage of qualifying |
|--------------------------------------|--------------------------|
| Individual work | 50% |
| Theoretical and practical final test | 50% |

REFERENCES

- Aleixandre-Benavent R. Fuentes de información en ciencias de la salud en Internet. *Panace@*. 2011;12(33):112–20.
- Aleixandre-Benavent R. Bibliometría e indicadores de actividad científica. En: Jiménez Villa J, Argimó Llas JM, Martín Zuro A, Vilardell Tarrés M, editores. *Publicación científica biomédica: cómo escribir y publicar un artículo de investigación*. Barcelona: Elsevier España; 2010. p. 363–84. ISBN: 9788480864619.



- Field A. *Discovering statistics using IBM SPSS statistics*. 6th ed. London: SAGE Publications; 2024.
- González de Dios J, González-Muñoz M, Alonso-Arroyo A, Aleixandre-Benavent R. Comunicación científica (I). La comunicación científica en la práctica clínica, docencia e investigación. *Acta Pediatr Esp*. 2013;71(5):129–32.

Likewise, the books, scientific articles and readings of interest recommended for the preparation of the contents addressed in each topic will be specified at the end of each class.