

Course Unit	Research Methodology and Data Analysis in Health and Physical Exercise	Field of study	Sport Sciences
Master in	Physical Exercise and Health	School	School of Education
Academic Year	2025/2026	Year of study	1
Type	Semestral	Semester	1
Workload (hours)	162	Contact hours	T 5 TP 19 PL 25 TC - S - E - OT 5 O -
Level	2-1	ECTS credits	6.0
Code	6125-520-1103-00-25		

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Vítor Pires Lopes

#### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. To understand the phases and the process of research
2. To know the main design research in exercise and health
3. To know the main statistical procedures used in each of the research design study
4. Using statistical software to assist the analysis involved with quantitative research techniques

#### Prerequisites

Before the course unit the learner is expected to be able to:  
Basic knowledge about statistics

#### Course contents

Knowledge and science. Theories, models and hypotheses. The problem of measurement in quantitative studies. Research methods and designs. Data analysis with specific software.

#### Course contents (extended version)

1. Knowledge and science
  - Bibliographic research
  - Research project
  - Structure of scientific paper
  - Structure of research report
2. The problem of measurement in quantitative studies.
  - Measurement errors
  - Reliability, validity, objectivity and internal consistency
3. Research methods and designs.
  - Longitudinal, cross-sectional and experimental designs
4. Data analysis with specific software.
  - Exploratory data analysis
  - Analysis of cross-sectional data
  - Analysis of longitudinal data
  - Correlation and prediction
5. Introduction to meta-analysis
6. Introduction to the hierarchical linear model (HLM)

#### Recommended reading

1. Larry B. Christensen, R. Burke Johnson, Lisa A. Turner (2010) Research Methods, Design, and Analysis, 11th Edition. Allyn and Bacon: Boston
2. Cohen, J. , P. Cohen, et al. (2003). Applied multiple regression/correlation analysis for the behavioral sciences. Mahwah, Lawrence Erlbaum Associates, Inc. , Publishers.
3. Tejedor FJT. Análisis de varianza. Madrid: La Muralla; 1999
4. Hox, J. (2002). Multilevel analysis. Techniques and applications. Mahwah, Lawrence Erlbaum Associates, Inc. , Publishers.
5. Escobar M. (1999). Análisis gráfico / exploratório. Madrid: La Muralla

#### Teaching and learning methods

Every topic will be taught with practical examples. The use of data analysis software will be done at the same time that the topics are taught.

#### Assessment methods

1. continuous evaluation - (Regular, Student Worker) (Final)
  - Intermediate Written Test - 50%
  - Practical Work - 50% (Resolution of Worksheets)
2. Exam evaluation - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 50%
  - Practical Work - 50% (Resolution of Worksheets (will be take into account the Resolution of Worksheet already done))

#### Language of instruction

Portuguese

#### Electronic validation

Vítor Pires Lopes	António Miguel de Barros Monteiro	Catarina Margarida Silva Vasques	Carlos Manuel Costa Teixeira
21-01-2026	21-01-2026	23-01-2026	03-02-2026