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| Course Unit | Research Methodology and Data Analysis in Sports Science | | | Field of study | Sport Sciences | | |
| Bachelor in | Sports - Minor in Sports Management | | | School | School of Education | | |
| Academic Year | 2023/2024 | Year of study | 1 | Level | 1-1 | ECTS credits | 7.0 |
| Type | Semestral | Semester | 2 | Code | 9563-624-1205-00-23 | | |

| Workload (hours) | 189 | Contact hours | T | TP | PL | TC | S | E | OT | O |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | 51 | - | - | - | - | - | - |

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 elaborate a scientific report with goals and hypothesis
2. To analyze data with descriptive statistic
3. To do univariate and bivariate inferential statistics analysis, both parametric and no parametric, such: correlation, regression and differences between groups

## Prerequisites

Before the course unit the learner is expected to be able to:
Not applicable

## Course contents

Methods of research an introduction. Descriptive statistics. Hypothesis testing. Testing Differences Between Means; Student t test; ANOVA; Repeated measures ANOVA: Qui-Squared. Correlation. Linear regression Using of specific software

## Course contents (extended version)

1. Descriptive statistic
   - Measures of central tendency
   - Measures of position
   - Measures of dispersion
   - Asymmetry and kurtosis
2. Inferential statistic.
   - Statistical probability and normal distribution.
   - Confidence intervals. Significance level and p values.
3. Student t test
   - Student t for independent groups
   - Student t for paired groups
4. Analysis of Variance (ANOVA)
   - One way ANOVA
   - ANOVA Repeated measures
   - Post-hoc tests and planed comparison
5. Chi-squared test
   - Single Sample Chi Square Test
   - two-way Chi Square
6. Correlation
   - Product-moment Pearson r
   - Spearman rs
7. Linear regression
   - Regression coefficients
   - Estimation error
   - sum of squares partition
8. An introduction to research methods
   - Project preparation and investigation report

## Recommended reading

1. Elsa Negas (2021) Estatística Descritiva - Explicação Teórica, Casos de Aplicações e Exercícios Resolvidos. Lisboa: Edições Sílabo
2. Reis, Felipa Lopes (2022) Investigação Científica e Trabalhos Académicos – Guia Prático 2ª ed. Lisboa: Edições Sílabo
3. Calapez, Teresa; Melo, Paulo; Andrade, Rosa; Reis, Elizabeth (2021) Estatística Aplicada – Vol. 1. 7ª Edição Lisboa: Edições Sílabo.
4. Argyrous, G. (2000). Statistics for social and health research. With a guide to SPSS. London: Sage

## Teaching and learning methods

Every subject will be taught in an applying way with practical examples. Inverted classroom teaching method may be adopted in some subjects

## Assessment methods

1. Continous evaluation - (Regular, Student Worker) (Final)
   - Intermediate Written Test - 50%
   - Intermediate Written Test - 50%
2. Exam evaluation - (Regular, Student Worker) (Supplementary, Special)
   - Final Written Exam - 100%

## Language of instruction

Portuguese

This document is valid only if stamped in all pages.

## Electronic validation

| Vítor Pires Lopes | Pedro Miguel Monteiro Rodrigues | Pedro Miguel Queirós Pimenta Magalhaes | Carlos Manuel Costa Teixeira |
|---|---|---|---|
| 30-01-2024 | 25-02-2024 | 26-02-2024 | 27-02-2024 |

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