

Course Unit	Research Methodology and Data Analysis in Sports Science		Field of study	Sport Sciences	
Bachelor in	Sports - Minor in Recreation and Leisure		School	School of Education	
Academic Year	2023/2024	Year of study	1	Level	1-1
Type	Semestral	Semester	2	ECTS credits	7.0
Code	9563-625-1205-00-23				
Workload (hours)	189	Contact hours	T 30	TP 51	PL -
			TC -	S -	E -
			OT -	O -	

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%
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2. Exam evaluation - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 100%

### Language of instruction

Portuguese

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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