

Course Unit	Statistics	Field of study	Mathematics and Statistics
Bachelor in	Environmental Engineering	School	School of Agriculture
Academic Year	2022/2023	Year of study	2
Type	Semestral	Semester	1
Level	1-2	ECTS credits	6.0
Code	9099-309-2101-00-22		
Workload (hours)	162	Contact hours	T 30 TP - PL 30 TC - S - E - OT 20 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) Luísa Maria Lopes Pires Genésio

#### Learning outcomes and competences

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

1. do a correct sampling
2. characterize data
3. apply statistics methods
4. To interpret the results

#### Prerequisites

Before the course unit the learner is expected to be able to:  
Don't have

#### Course contents

Review of the techniques of integration Descriptive statistics Probability theory. Probability Distribution Functions. Statistics Estimation (one Sample) Simple Regression analysis

#### Course contents (extended version)

1. Integral calculus review
2. Descriptive Statistics
  - Introduction
  - Statistics objectives
  - Types of data and measurement uncertainties
  - Population and sample
  - Statistics and central tendency measures
  - Dispersion measures
  - Graphical presentation of the frequency table
  - Others statistics
3. Probability Theory
  - Basic notions
  - Probability
  - Frequency distributions
  - Random variables
4. Probability Distribution
  - Introduction
  - Discrete distributions
  - Hypergeometric Distribution
  - Binomial distribution
  - Poisson distribution
  - Continuous distributions
  - Gauss distribution
5. Significance tests
  - Statistical hypothesis
  - Null hypothesis
  - Significance level
6. Sampling distribution
  - Distribution of sample mean
  - Central limit theorem
7. Non-parametric and parametric tests (one sample)
8. Simple linear regression

#### Recommended reading

Guimarães, R. , & J. Cabral , J. (2010). Estatística. Verlag Dashöfer Portugal.

#### Teaching and learning methods

Expository, demonstrative and interactive

#### Assessment methods

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

#### Language of instruction

Portuguese

## Electronic validation

Luísa Maria Lopes Pires Genésio	Carlos Manuel Mesquita Morais	Artur Jorge de Jesus Gonçalves	Paula Sofia Alves do Cabo
07-12-2022	08-12-2022	08-12-2022	13-12-2022