Curricular Unit Form

POLITÉCNICO DE PORTALEGRE

POLITÉCNICO DE PORTALEGRE
Escola Superior Agrária de Elvas

Updated On	2024/02/07
Curricular Year / Period	2023/24 / S1
Course	Agronomy
Curricular Unit	Mathematics and Statistics
Language(s) of Instruction	Português

ECTS/tempo de trabalho (horas)

ECTS	Total	Horas de contacto semestral								
		T	TP	PL	S	TC	E	O	OT	EC
6	160	30	34		0	0	0	0	0	0

T - Theoretical; TP - Theoretical and practical; LP - Laboratory Practice; S - Seminar; TG - Tutorial guidance; FW - Fieldwork; T - Training; ; EC - Clinical teaching; O* - Other hours typified as Clinical Training under the Directive 77/453/EEC of June 27, adapted by Directive 2005/36/EC.

Teacher in charge (GDPR consent)

[complete name, email]

Sofia Maria Verissimo Catarreira / sofiaverissimo@ipportalegre.pt

Prerequisites

[Curricular Units that must precede and specific entry competences]

There is not.

Learning outcomes

[Description of the overall and specific objectives] [Knowledge, skills and competences to be developed by students]

The curricular unit of Mathematics and Statistics is intended, on the one hand, to support mathematics, as an instrument of analysis, understanding and development of solutions for the subjects of the remaining curricular units of the study plan of the course and, on the other, to enable the student to: (i) use statistical methods to summarize data and perform exploratory analysis of them; (ii) understand the conditions underlying the applicability, validity and limits of the theoretical models used for statistical analysis; (iii) analyze the results obtained; (iv) distinguish between cause-effect relationships and relationships of statistical association between variables; (v) acquire basic research skills and critical reading of technical and scientific documentation; (vi) know how to import, store, process, analyze and present data using the spreadsheet as a universal tool.

Sustainable Developemnt Goals

Syllabus

Matrices and systems of linear equations: General considerations about matrices; Matrix properties; Matrix Algebra; Matrix transposition; Linear dependence and independence; Determinant of a matrix; Solving systems of equations. GAUSS method; Primitivation of functions; Integration of functions. Calculation of areas. Introduction to descriptive statistics: Definition of statistics; Population or statistical universe; Objective of statistics; Statistical sample; Descriptive and inductive statistics; Descriptive Statistics: Discrete and continuous variables; Frequency distribution; Graphical representation of frequency distributions; Measures or indicators. Central tendency or location measures. Dispersion measures; Random variables: Discontinuous or discrete random variables; Continuous random variables; Theoretical probability distributions. Discrete distribution. Continuous distributions. Statistical Inference: Data analysis, inference and confidence intervals; Estimation; Statistical decision theory, hypothesis testing and significance. Experimental Design: Basics of experimental design.

Teaching methodologies (including assessment)

[Specify the types of assessment and the weights and evaluation criteria]

1 - Teaching methodologies

Theoretical classes with exposure of the contents and subsequent exploration through solved examples and exercises to be solved in class and / or at home. Theoretical-practical classes with explanation and direct exemplification, as well as resolution of example sheets. Group work.

2 - Period assessment

Two interim exams and / or exam (40% + 50% = 90%)
. Follow-up work and / or mini-tests (10%)
With regard to the practical component (mini-tests; class questions, among others), this is optional, and its assessment will only be considered if it benefits the student. Thus, for students who did not carry out practical work, or whose performance was not as desired, it implies that the partial weighting will be as follows:

	- 1st frequency/part A - mathematics 45% -2nd frequency/part B - statistic 55% To obtain approval in the curricular unit by frequency, all students must present a positive average in the assessment elements, not being able, however, to have a grade lower than 7.5 in either of the two frequencies. If the student does not meet the previous conditions, to pass the curricular unit, he/she will have to take an exam. All students must have a minimum of 75% attendance in all face-to-face teaching-learning activities. It is expressly forbidden for students to use graphing calculators, mobile phones, smart watches, tablets and the like in the assessment tests, resulting in immediate cancellation of the test. Only the use of a scientific calculator is allowed in part B (second frequency). To take the tests, students must have a student card, or other official identification document with a photograph and writing material. **3 - Examination assessement** In an exam, for the purpose of approval, the student will have the option of answering the entirety of the exam or just the part of the subject in which he did not obtain a grade equal to or greater than 7.5 in the respective frequency. These conditions will be valid for the exams of the normal season, of the appeal season and of the special season, of the current academic year. In case the student chooses to take the complete exam (two parts), the classifications from previous moments will not be taken into account (frequency and practical part), only the exam grade will be considered. With regard to the practical component (mini-tests; class questions, among others), this is optional, and its assessment will only be considered if it benefits the student. Therefore, for students who did not carry out practical work, or whose performance was not as desired, or who only took the exam, the partial weighting will be as follows: - 1st frequency/part A - mathematics 45% -2nd frequency/part B - statistic 55% In the exam, for the purpose of improving the grade, the student will always have to answer the entire subject. All students must have a minimum of 75% attendance in all face-to-face teaching-learning activities; It is expressly forbidden for students to use graphing calculators, mobile phones, smart watches, tablets and the like in the assessment tests, resulting in immediate cancellation of the test. Only the use of a scientific calculator is allowed in part B. To take the tests, students must have a student card, or other official identification document with a photograph and writing material.
Bibliography	**1 - Main Bibliography** MOURATO, Joaquim (1997). Estatística. Textos de apoio às aulas. ESAE CARVALHO, Adelaide. Exercícios resolvidos com o EXCEL XP CALLEGARI-Jacques, S.M. (2003). Bioestatística : princípios e aplicações. 1ª edição. Artmed Editora AS. Porto Alegre Brasil HOFMANN, Rodolfo, e VIEIRA, Sónia. Estatística experimental, Atlas REIS, Elisabeth, Estatística Descritiva, Edições Sílabo. MURTEIRA, Bento J., e BLACK, George H., Estatística Descritiva, McGraw-Hill OLIVEIRA, J. Tiago, Probabilidades e Estatística (conceitos, métodos e aplicações), Vol. I e II, McGraw-Hill **2 - Complementary Bibliography**
Special Situations [Students with special status]	**1 - Period assessment - Students with special status** The above conditions apply, with the exception of attendance, in which the student has no mandatory minimum limit. **2 - Examination assessement - Students with special status** The above conditions apply, with the exception of attendance, in which the student has no mandatory minimum limit. No special support is provided, leaving the teacher in each situation in particular.