SUBJECT DESCRIPTION

MODELO

PED.015.03

Course	Pharmacy – 1st cycle					
Subject	Biostatistics					
Academic year	2023/2024	*Curricular year*	1st	*Study period*	2nd semester	
Type of subject	Compulsory	*Student workload (H)*	Total: 135	Contact: 75	*ECTS*	5
Professor(s)	Cecília Maria Fernandes da Fonseca					

☒ *Area/Group Coordinator* ☐ *Head of Department*	*(select)*	José Miguel Salgado

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

The students will have contact with key concepts in the area and will work with software for data processing, the SPSS (Statistical Package for Social Sciences). It is intended that with the knowledge gained in the Subject Module the students develop the following skills and abilities:
- Understand the importance of statistics in support of health sciences;
- To understand the language and the notation of statistics;
- Acquire knowledge to apply the methods and techniques of data analysis in health sciences and drawing conclusions from data;
- Critical thinking in the analysis / evaluation of results, taking into account the context of the practical case study;
- Familiarize themselves with SPSS and Microsoft Excel, a statistical tool.
To the acquisition of previous skills is inherent the understanding of scientific knowledge, namely the concepts and techniques studied in the context of the course.

2. PROGRAMME

1 Descriptive Statistics
    1.1 Data organization
    1.2 Central tendency measures
    1.3 Dispersion measures
    1.4 Assimetry measures
    1.5 Kurtosis measures
2 Inferencial Statistics
    2.1 Probability distributions: Binomial, Normal, T-Student, Qui-quadrado e F-Snedcor
    2.2 Intervalar estimation: mean, proportion and variance
    2.3 Parametric tests
            2.3.1.1 Tests for the mean, variance and populational proportion
            2.3.1.2 Comparing two population means
            2.3.1.3 Comparing the mean for more than two populations: ANOVA
    2.4 Non parametric tests
            2.4.1.1 Tests of Friedman, Wilcoxon,McNemar, Mann-Whitney and Kruskal Wallis
            2.4.1.2 Qui-Square independence test
3 Linear regression and correlation
4 Introduction to statistical softwares
    3.1 *Microsoft Excel*
    3.2 *Statistical Package For Social Sciences* (SPSS)

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The program contents are from the areas of descriptive statistics and statistical inference and are essential for students to perform a statistical analysis of data. Practical cases and exercises will be proposed, from the health

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area, where students apply the contents learned, realizing their importance in supporting the health sciences, developing their critical sense and using the statistical language and notation. In the context of data processing, students will use data from the health area and the tools SPSS and *Microsoft Excel*, with which they will become familiar in some of the theoretical-practical sessions.

4. MAIN BIBLIOGRAPHY

1. Baldi, B. & Moore, D. (2014). *A prática da Estatística nas Ciências da vida*. LTC.
2. Cunha, G.; Martins, M.; Sousa, R.; Oliveira, F. (2007). *Estatística aplicada às ciências e tecnologias da saúde*. LIDEL.
3. Dawson, B.; Trapp, R. G. (2003). *Bioestatística Básica e Clínica*. McGraw-Hill.
4. Hall, A.; Neves, C.; Pereira, A. (2007). *Grande Maratona de Estatística no SPSS*. Universidade de Aveiro.
5. Maroco, J. (2007). *Análise Estatística com utilização do SPSS*. Edições Sílabo.
6. Oliveira, A. G. (2009). *Bioestatística, epidemiologia e investigação - Teoria e aplicações*. LIDEL.
7. Pestana, M.; Gageiro, J. (2014). *Análise de Dados para as Ciências Sociais*. *A Complementaridade do SPSS* (6ª edição). Edições Sílabo.
8. Pedrosa, A.; Gama, S. (2016). *Introdução Computacional à Probabilidade e Estatística* (3ª edição). Porto Editora.
9. Fonseca, C. (2024). *Caderno Prático – Bioestatística*. Material didático para a UC Bioestatística, ESS/IPG.
10. Fonseca, C. (2024). *Textos Auxiliares - Bioestatística*. Instituto Politécnico da Guarda. Material didático para a UC Bioestatística, Instituto Politécnico da Guarda.
11. Freund, J. (2004). *Modern Elementary Statistics* (11th edition). Pearson Prentice Hall.
12. Triola, M. M.; Triola, M. F.; Roy, J. (2019). *Biostatistics for the Biological and Health Sciences* (2nd edition). Pearson Education Limited

13. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

The teaching methodology consists of theoretical expositions, complemented with the practical component of exercise solving and case studies, involving the statistical treatment of health data, with the aid of SPSS and Microsoft Excel. In the lessons the blackboard, computer, multimedia projector and SPSS and *Microsoft Excel* tools are used and actively promoting student participation.

Evaluation:

1) **Continuous**: two written tests (1st Test and 2nd Test, with a minimum score of 6 values), to assess the theoretical component, plus one test to assess the practical component of the use of computer tools for data organization and analysis (3rd Test, with a minimum score of 6 values). Each test will be rated out of 20 and the final classification will be obtained as follows:

Final Score = 70% (mean of 1st Test and 2nd Test) + 30% (3rd Test).

In the case of students who have attended this subject in previous three years and who have complied with the attendance regime and have carried out practical assignments with an assessment of 10 or higher, will be exempt from taking the 3rd Test aimed at assessing the practical component of the use of computer tools in the organization and analysis of data.

2) **Exam**: normal season and time of appeal. The following situations exist:

I. Students who completed all three Continuous Assessment Tests and obtained a final grade lower than 10 points, but with a passing grade (equal to or greater than 10 points) in the 3rd Test, will take a written Test (graded from 0 to 20 points) and their final grade will be determined by:

Final Score = 70% (written Test) + 30% (3rd Test).

II. The student will have a written Test (rated out of 20 values) and the final classification will be the one obtained in it.

Approval depends on the fulfillment of the frequency regime and a final grade over 10 values.

Students who undergo continuous evaluation or examination and receive a grade higher than 16 values will have to undergo the oral test to defend the grade obtained, otherwise they will have the final classification of 16 values.

14.COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

Students acquire theoretical knowledge in the areas of descriptive statistics and statistical inference through the presentation of concepts and definitions, followed by the resolution of exercises and case studies. The scientific knowledge and the SPSS and *Microsoft Excel* tools will be used by students in the realization of the proposed practical cases, contemplating the organization, analysis, critical interpretation of a set of data from the health area. Given that will be promoted joint discussion of the results obtained in the resolution of case studies and exercises, students will use the language and statistical notation and develop their critical and argumentative capacity.

15.ATTENDANCE

Student needs to attend 2/3 of the practical lessons.

16.CONTACTS AND OFFICE HOURS

Professor: Cecília Fonseca
e-mail: cfonseca@ipg.pt
Office: 30 – ESTG
Attendance: Thursday: 8:30-9:30 and 16:00-18:00

DATEClique

26 February 2024