

COURSE UNIT INFORMATION SHEET (SYLLABUS)

2019/2020

Name
Introduction to Probability and Statistics Applied to Psychology
Teaching staff
▪ Ana Sousa Ferreira (Responsible) ▪ Magda Sofia Roberto
ECTS
▪ 6 ECTS
Functioning
▪ 2 hours/week of Theoretical-Practical Classes, 2 hours/ week of Practical Classes, total of 14 weeks of classes. ▪ If it is not possible to use only face-to-face classes, Theoretical-Practical Classes will consist of online classes using the Zoom tool or another platform and/or classes with PowerPoint narration. ▪ If it is not possible to use only face-to-face classes, Practical Classes will work, if possible, in a mixed regime, dividing each class into two groups alternately, one week face-to-face class and the following week with distance classes with exercise resolution guides and autonomous work student. ▪ In the case of impossibility of recourse to the mixed regime, the Practical Classes will work only with distance learning, with proposals of exercises, exercise resolution guides and autonomous work of each student.
Learning goals
Giving students the possibility of learning how to perform and interpret the statistical methodologies of data analysis most common in the field of Psychology.
Skills to develop
1. To know how to identify variables and levels of measurement in a research problem; 2. To know how to calculate and interpret the descriptive characteristics of a data set (mean, mode, median, quartiles, variance, standard deviation, standard error, ...); 3. To know the concepts of population, sample, skewness, dispersion, probability and significance level as well as to determine and interpret association measures or correlation coefficients to analyse the relationship between qualitative or quantitative variables; 4. To know how to apply the statistical inference principles and the procedures of hypothesis testing and confidence intervals; 5. To know efficiently using computers and statistical software and interpret its outputs.
Prerequisites (Precedences) *
Not applicable.
Contents
I. Exploratory Data Analysis

1. Univariate Exploratory Analysis: Introduction; Population and samples; Random variables types and their classification; Data collection and graphical representation of data; Central tendency measures and percentiles; Dispersion measures; Extreme data detection (*outliers*); Skewness and Kurtosis coefficients; Robust descriptive measures (Measures resistant to the presence of extreme data or outliers).
2. Bivariate Exploratory Analysis: Introduction; Crosstabs; Association measures and correlate coefficients; Simple linear regression.

II. Statistical Inference:

1. Introduction; Statistical Inference; Population and sample; Probability Distributions; Statistical significance concept;
2. Inference to the mean value of a population. One sample: Introduction; Sampling Distribution of the Mean; Central Limit Theorem; Confidence intervals and Hypothesis tests for the mean; Inference with small samples; The Student t distribution; Inference with non-normal data.
3. Bivariate Statistical Inference.

Bibliography

- Field, A. (2013). *Discovering statistics using IBM SPSS Statistics* (4th ed.). London: Sage Publications.
- Howell, D.C. (2017). *Fundamental Statistics for the Behavioral Sciences* (9th ed.). Australia, Boston, MA: Cengage Learning.
- Marôco, J. (2014). *Análise Estatística Com o SPSS Statistic* (6th ed.). Pero Pinheiro: Report Number, ISBN: 9789899676343.
- Moore, D. S., Notz, I.N., Fligner, M.A. (2017). *The basic practice of statistics* (8th ed.). New York: W. H. Freeman and Company.
- Moore, D. S., Notz, W.I., Fligner, M.A. (2014). *A Estatística Básica e a sua Prática* (6th ed.). Rio de Janeiro: LTC.

Teaching methods

1. Theoretical-Practical classes: 2h a week. Introduction of concepts based on the analysis of examples of real data, oriented to the area of Psychology, with the use of masterly and dialogued exposition. Presentation of practical exercises.
2. Practical classes: 2h a week. They are guided by the principle of "learning by doing" and are part of the discussion and resolution of applied exercises, designed to cement and complement the knowledge acquired in theoretical classes. They are performed with the support of the statistical software IBM SPSS Statistics.

In case of impossibility of resorting only to face-to-face classes, each week of classes will be thought as a challenge launched to students consisting of: 1. Introduction of new methodologies in the Theoretical-Practical Classes; 2. Proposal of exercises on the methods presented; 3. Making resolution available at the end of the week. 4. Control sheet of learning of the contents of that week in the form of a multiple choice test carried out at *E-Learning ULisboa (Moodle)*, and the student is then given the answer grid with some additional explanations.

Evaluation Regimes (General and/or Alternative)

Completing successfully the course is conditional on the realization of two mandatory evaluations elements:

1. Continuous evaluation element:

Group practical work: Group work carried out by 3 or 4 students consisting of the introduction, analysis and interpretation of data related to a psychology research problem and presentation in practical class (grade minimum 10.0 values). It is compulsory for all students regardless of the element of punctual evaluation chosen.

2. Punctual evaluation element:

Approval in one written individual exam (grade minimum 8.0 values) is mandatory.

- a. The 1st period exam: This exam can be done by all students.
- b. The 2nd period exam: This exam can be done by students who did not or did not obtain approval in the exam of the 1st period, or who want to improve the grade.
- c. Special Period Exam: Students who qualify for enrolment at this time.

In the event that it is impossible to attend classes face-to-face, the group work will follow similar rules, but with online presentation using the Zoom tool or another platform and delivery of the presentation slides. The final exam, on the contents of the theoretical and practical classes, will be carried out via ULisboa E-Learning (Moodle), using control mechanisms.

Evaluation Elements (Dates due, weights, minimum required grades)

The approval in the course unit requires success in the element of continuous evaluation and in the point element of evaluation:

1. **Continuous evaluation element: 30% of the final mark**, registration made according to the schedule provided by the teachers. The approval in the course unit is conditioned to the grade of the continuous assessment being **greater than or equal to 10 values**.
2. **Punctual evaluation element: 70% of the final mark**, enrolment according to the academic calendar. The approval in the curricular unit is conditioned to the grade of the punctual evaluation being **greater than or equal to 8 values**.
3. Students will also be able to enjoy **one additional value** in their grade if they carry out two small practical works about the contents of IPEAP. This bonus is optional.

Rules for grade improvement

Grade improvement can only be made in the 2nd period exam.

Rules for students having previously failed the course unit

Students having previously failed the course unit who performed a successful group work during the previous school year (2019/20) can keep the grade obtained if they wish.

Students having previously failed the course unit who performed a successful group work during a school year before 2019/20 can't keep the grade obtained. These students must do a new group work.

Attendance of classes is not compulsory but it is advised to all students.

Requirements on attendance and punctuality*

Attendance of classes is not compulsory but it is advised to all students.

Rules for special students

General rules of the FPUL.

Language of instruction

Portuguese but English reading domain is necessary.

Disciplinary violations and penalties

According to the Evaluation of Learning Regulation of the Faculty of Psychology of the University of Lisbon, the following behaviors are considered as disciplinary offenses subject to disciplinary action:

- a) To use or attempt to use materials, information, notes, study resources or other objects and equipment not authorized in academic exercises;
- b) To help or try to help a colleague in committing a disciplinary offense;
- c) To submit the same written work for evaluation in different course units without permission from the instructors, even if with minor changes;
- d) To present someone else's work as one's own;
- e) To forge, or change without permission from the author, any information or citation in an academic work;
- f) To interfere, change or attempt to change grades;
- g) To try to prevent or interfere with the proper functioning of classes, research or other academic activities;
- h) To make false accusations regarding instructors, governance bodies, other students or non-teaching staff of the FPUL;
- i) To falsify signatures in attendance sheets, documents relating to evaluation elements or in any official document relating to an academic process or status.

Disciplinary offenses committed in any assessment element can lead to its annulment, and must be reported to the Pedagogical Council or, considering their gravity and repetition, may lead to other penalties, to be determined by the Rector of the University of Lisbon.

* If applicable