

APPLIED STATISTICAL METHODS

Degree in Touristic Activities Management

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Code: 12305

Main Scientific Area: Statistic

Lecturer: Mário João Freitas Sousa Basto

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 60h Total Workload: 108h

ECTS: 6,0

Objectives

Practically every aspect of daily life is related to the observation and processing of quantitative data and, consequently, the application of statistical methodologies. Unfortunately, this situation often encounters deficient and dangerous answers and interpretations, lacking adequate theoretical and methodological knowledge. Thus, this course is intended to sensitize the students to the importance of the correct resolution of real problems that increasingly tend to be of large numbers, providing students with the control of the basic techniques and quantitative methodologies and in the data processing analysis and inference from this. The objectives of the Course Unit are:

1. Plan, obtain, analyze and interpret the data and present the results to summarize the information.
2. Discover patterns in data.
3. Handle and quantify uncertainty.
4. Extract knowledge from sample data by inferring to the population.
5. To know the advantages and limitations of statistical inference techniques.
6. Critically infer for correct decision making.

Learning Outcomes

Skills to develop: distinguish between population and sample; organize and summarize data from statistical studies; identify and classify variables; decide which measures can be used in different situations, their advantages and disadvantages; create and interpret graphs; understand fundamental concepts of probability; identify the most important probability distributions; estimate and interpret population unknown parameters; perform, interpret and make decisions based on confident intervals and hypothesis tests.

Course Contents

1. Descriptive Statistics and Inferential Statistics. Sample and population. Different types of data. Data presentation:

charting and graphing. Histogram. Statistics and parameters. Measures of location and dispersion. Boxplot. Measures of skewness and kurtosis.

2. Probability spaces. Sample space. Events. Total probability theorem. Independence of events. Mutually exclusive events. Random variables. Theoretical distributions. Binomial distribution. Normal distribution.

3. Sampling methods. Sampling distributions. Central limit theorem.

4. Point estimation. Properties of Estimators. Confidence intervals.

5. Hypothesis testing. Null and alternative hypothesis. Inference errors. Test power. p-value. Relationship between confidence intervals and hypothesis testing.

Recommended Bibliography

Hall, A., Neves, C., Pereira, A. (2011). Grande Maratona de Estatística no SPSS. Escolar Editora.

Pinto, J., Curto, J. (2000). Estatística para a Economia e Gestão. Instrumentos de apoio à tomada de decisão. Edições Sílabo.

Reis, E., Melo, P., Andrade, R., Calapez, T. (2015). Estatística Aplicada, volume 1. Edições Sílabo

Reis, E., Melo, P., Andrade, R., Calapez, T. (2015). Estatística Aplicada, volume 2. Edições Sílabo.

Robalo, A. Estatística Exercícios, volume 1. Distribuições, Inferência Estatística (6ª Edição). Edições Sílabo

Robalo, A. Estatística Exercícios, volume 2. Probabilidades, Variáveis Aleatórias (6ª Edição). Edições Sílabo.

Stirling, D. CAST, Computer-Assisted Statistics Textbooks. <https://cast.idems.international/>

Webster, A. (2007). Estatística Aplicada à Administração e Economia. McGraw-Hill.

Learning and Teaching Methods

Content 1 aims to verify objectives 1 and 2.

Content 2 aims to verify objectives 3 and 4.

Content 3 aims to verify objectives 1 and 3.

Content 4 aims to verify objectives 4, 5 and 6.

Content 5 aims to verify objectives 4, 5 and 6.

Assessment Methods

Student assessment will be continuous and operationalized through the following assessment elements: one global written tests (TG) in person; interest, participation and commitment (A) and the elaboration of the "FASA 50/10 PROJECT" in groups of (+/-5) students with mandatory presentation (F). The participation, interest and commitment

component (A) in the continuous assessment has a minimum score of 10. Students with a grade below 10 in component A will fail the evaluation and may go to one of the Exam periods.

The Final Grade (NF) of continuous assessment will be given by:

$$NF1 = 70\% TG + 15\% A + 15\% F$$

$$NF2 = 85\% TG + 15\% F$$

$$NF = \text{Max} (NF1, NF2)$$

Continuous assessment is mandatory, however, "PROJECT FASA 50/10" is mandatory for new students only. Participation in this project is optional for repeat students, worker students or those with other "special statuses", and for students who want to improve their grades, who prove that they are unable to participate in classes and their work. These students must request, via MOODLE, a replacement work, till October 15, 2023.

In the case of students who wish to improve their grades in curricular units that they passed before implementing the "FASA 50/10 project" in the curricular year in which the UC is part of, the exam is weighted at 100%.

Assessment by EXAME (all seasons):

- 85%: Written exam on all topics taught;

- 15%: grade obtained within the scope of the elaboration of the "PROJETO FASA 50/10" in groups of students with a mandatory presentation, or the grade of the replacement WORK in cases where this applies.

Regarding the 15% GRADE within the scope of the preparation of the "FASA 50/10 PROJECT" the weighting will be:

30% PITCH (presentation in English, of which 10% individual assessment);

40% Digital portfolio (in English);

20% attendance and participation in SOFT SKILLS and SPRINT WEEKS sessions;

10% self and hetero evaluation session on performance in the preparation and presentation of the Pitch, mediated by the mentor.

The "FASA 50/10 PROJECT" does not have a minimum grade. Students who do not complete the "PROJECT FASA 50/10" (or the replacement work) will receive a grade of zero in this component.

If the final grade NF is less than 9.5 points, the student is not approved in the curricular unit.