BUSINESS STATISTICS

Academic Year: 2024/2025   **Term**: 2nd Trimester   **ECTS**: 3.5

INSTRUCTOR

António Fidalgo

CONTACTS AND OFFICE HOURS

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BIOGRAPHY

Antonio Fidalgo is an Affiliated Professor at the Católica Portuguese University, Lisbon. He has a M.A. in Economics (Universitat Pompeu Fabra, Spain) and a Ph.D. in Economics (Lausanne University, Switzerland). He was a Lecturer at Fresenius University of Applied Sciences (Germany), and taught at Boston University (USA) and the University of Magdeburg (Germany). His research focuses on long run economic development, employing a quantitative empirical approach informed by economic theory.

COURSE OVERVIEW

This course is part of a sequence completed by the course "Business Research Methods (B)". Their overall goal is to introduce quantitative methods as a way to extract information from the data with the ultimate goal of improving managerial decisions.

LEARNING OBJECTIVES

After completing the sequence, students will understand the main elements of an empirical study, from the original formulation of a problem to the publication of the results through the data construction and analysis. This will allow students to better understand the quantitative information that is ubiquitous in the current business context. They will also be well equipped to launch their own empirical investigations.

TEACHING AND LEARNING METHODOLOGY

The learning methodology is based on class lectures and homework. The lectures describe a structured set of selected relevant concepts along with illustrative examples. Students are invited to participate in class discussions as a way to successfully master the material. The homework consists in assignments based on the topics covered in the lectures and requiring coding in the software R.

REQUIRED BACKGROUND

None.

ASSESSMENT

Please refer to the appendix for additional details on these components.

Assignments and Quizzes	Individual/group grade	50%
Final Exam	individual grade	50%

COURSE CONTENT

The guiding thread of the course is the emphasis on the random nature of the data generating processes along with its often-misleading consequences. Thus, after taking this class, students should embrace statistics as a challenging yet necessary systematic approach to avoid common decision traps.

The content of the course is twofold. First, it develops basic concepts that are useful in the current data-oriented business environment such as data collection and tidying, types of random variables, sample selection, sample statistics and sampling distributions, simple tests of hypotheses, etc.

Second, the course introduces the software tools to carry analyses of real-world datasets and to report the subsequent results. Thus, in this class, students will learn how to use the free program R through the RStudio IDE in qmd files. The reason for this choice is that it allows to reach two highest standards in research, namely reproducibility, and dynamic documents.

Topics covered in the class include the following:

- Refresh of basic statistical concepts
- Introduction to R, RStudio and .qmd files
- Data collection, issues and concepts
- Statistics, samples, and sampling distributions
- Understanding univariate random variables
- Exploratory data analysis and graphics
- Introduction to tests of hypotheses
- Further statistical concepts

BIBLIOGRAPHY

Required readings:

Diez, D., Çetinkaya-Rundel, M., & Barr, C. (2019), *OpenIntro Statistics*.

Recommended books:

Field, A. (2012). *Discovering Statistics using R*. London: Sage Publications.
James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An Introduction to Statistical Learning*. New York: Springer.
Spiegelhalter, D. (2019). *The art of statistics: Learning from data*. Penguin UK.

Online materials:

The Diez et al. textbook is also available under a Creative Commons license, with the source files hosted on Github.

Extra Costs (case studies, platforms…): None

Complementary material such as research articles, case studies or lectures notes will be introduced during the class.

ADDITIONAL RESOURCES

Bootstrap is a curated collection of resources, techniques, and personal development tools from academic sources, thought-leaders, and well-established productivity practices. bootstrap_ - Productivity & Study Resources | CATÓLICA-LISBON (ucp.pt)

CODE OF CONDUCT AND ETHICS

Católica Lisbon School of Business and Economics is a community of individuals with diverse backgrounds and interests who share certain fundamental goals. A crucial element to achieve these goals is the creation and maintenance of an atmosphere contributing to learning and personal growth for everyone in the community. The success of CATÓLICA-LISBON in attaining its goals and in maintaining its reputation of academic excellence depends on the willingness of its members, both collectively and individually, to meet their responsibilities.

Along with all the other members of our community, students are expected to follow professional standards and CATÓLICA-LISBON standards of Academic Integrity. Some details should be mentioned here: Please arrive on time for class with uninterrupted attendance for the duration of the class. Signing attendance sheet for anyone else in the class constitutes fraud and a violation of the CLSBE code of conduct. Use of computers and other electronic devices during the class is not allowed, unless expressly requested by the instructor of the course. Students who persistently act in a disruptive and disrespectful manner during the class session may be invited to leave.

Students are expected to behave at all times according to the fundamental principles of academic integrity, including honesty, trust, fairness, respect, and responsibility. In particular,

a. In **individual graded assignments** of any type, students may not collaborate with others or use any materials without explicit permission from the instructor of the course;

b. In **group assignments** and reports, all students listed as authors should have performed a substantial amount of work for that assignment;

c. It is dishonest to fabricate or falsify data in experiments, surveys, papers, reports or other circumstances; fabricate source material in a bibliography or "works cited" list; or provide false information in other documents in connection with academic efforts;

d. **Plagiarizing**, i.e. "to steal and pass off the ideas or words of another as one's own and or to use another's production without crediting the source" (Merriam-Webster Dictionary) is an Academic Integrity breach. It can be avoided by using proper methods of documentation and acknowledgement. Visit this guide for additional resources on how to avoid plagiarism in your written submissions: https://www.turnitin.com/papers/understanding-the-turnitin-similarity-report-student-guide

e. In **exams** students must not receive or provide any unauthorized assistance. During an examination, students may use only material and items authorized by the faculty. Use of smartwatches or other communication devices is not permitted during the exam.

Academic integrity breaches will be dealt with in accordance with the school's code of Academic Integrity: https://www.clsbe.lisboa.ucp.pt/system/files/assets/files/academicintegritycode.pdf

APPENDIX

Empirical work requiring a recent laptop will be done in class. Students must be ready to bring their laptop when necessary, including for evaluations (e.g., term exams).

Grading:

Class attendance and punctuality are mandatory. They will be monitored. Failure to comply will be penalized by up to two points in the final grade. Participation is strongly encouraged: while not directly granting points in the grade, it can be used to assess border situations.