Perspectives on Statistics

Academic Year: (2023 / 2024) **Review date: 29/01/2024 13:13:57**

Department assigned to the subject: Statistics Department

Coordinating teacher: CABRAS , STEFANO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Statistica Inference

OBJECTIVES

Acquisition of knowledge on:

1) perspective on the applications and use cases of statistics today in the business environment;
2) analytical skills needed in a statistical consultancy service; 3) knowledge of statistical issues in business and research institutes.
3) knowledge of statistical issues in business and in research institutes
4) elements of multiple hypothesis testing
5) Elements of causal inference

DESCRIPTION OF CONTENTS: PROGRAMME

1. The AMA^{-1} perspective
2. Research topics at the Department of Statistics
3. The business with statistics
4. Statistics in applied research
5. Statistical consulting
6. Elements of Multiple testing
7. Elements of Causal Inference

This program will address a wide range of practical examples and database applications, focusing on critical issues such as the treatment of sustainability and climate change, the promotion and protection of Human and Fundamental Rights, gender equality, and the promotion of equal treatment and non-discrimination, as well as the importance of universal accessibility. Each of the seven-course topics will be enriched with case studies and data analysis reflecting these essential themes, providing students with a deep and applied understanding of how statistics can be a powerful tool to address and solve some of the most important and urgent issues of our current society.

LEARNING ACTIVITIES AND METHODOLOGY

Lecturing activities with heads of research services in companies and research institutes.
Lectures on elements of causal inference and multiple hypothesis testing.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

Class participation and two individual or group assignments completed during the course count for 100% of the final mark for the ordinary exam.
A final exam (a data analysis problem related to the content of the course) will count for 100% of the final mark only if the student has never participated in the continuous assessment.
In the extraordinary call, only the final exam (a data analysis problem related to the content of the subject) will count for 100% of the final mark.

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

BASIC BIBLIOGRAPHY

- Alex Dmitrienko, Ajit C. Tamhane, and Geert Molenberghs Multiple Testing Problems in Pharmaceutical Statistics, Chapman & Hall CRC, 2010

- Guido W. Imbens and Donald B. Rubin, Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction, Cambridge University Press, 2015

- Javier Cabrera and Andrew McDougall Statistical Consulting, Springer, 2002

ADDITIONAL BIBLIOGRAPHY

- David Spiegelhalter The Art of Statistics: Learning from Data, Pelican, 2019