

UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Big Data Management and Analysis in Physics Research

2223-2-F9101Q024-F9101Q025M

Aims

Provide a complete and updated picture of the use of Big Data Analytics in the Physics sector

Contents

The Laboratory intends to provide detailed and updated examples of the use of Bg Data Analytics in Physics research, with a theoretical introduction to the various methodologies, examples of real data and the possibility of analyzing concrete cases in depth.

Detailed program

- 1. Introduction to Bg Data in Particle Physics and Astrophysics.
- 2. Introduction to Python and Jupiter Notebook.
- 3. Pandas dataframe and libraries for data analysis.
- 4. Regression techniques applied to research in Physics.
- 5. Decision Trees in Physics research.
- 6. Clustering and classification in data analysis in Physics
- 7. Time series in Physics research.

8. Neural networks in data analysis in Physics
Prerequisites
Basic knowledge of Python.
Teaching form
Frontal lessons and practical laboratory sessions.
Textbook and teaching resource
Slides and additional material in english will be provided to students.
Semester
Second semester.
Assessment method
Oral exam. Discussion of exercises proposed during the laboratory sessions.
Office hours
On appointment.
Sustainable Development Goals