

UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Big Data Management and Analysis in Physics Research

2425-2-FDS01Q024-FDS01Q026M

Aims

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

Contents

The Laboratory intends to provide detailed and updated examples of the use of Big 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 Big 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	3. Neural networks in data analysis in Physics
Prer	equisites
Basic	knowledge of Python.
Tead	ching form
	al lessons and practical laboratory sessions, alla ctivities will be held in presence. ons will be in instructional mode, while laboratory sessions will be in interactive mode.
Text	book and teaching resource
Slides	s and additional material in english will be provided to students.
Sem	ester
Secor	nd semester.
Asse	essment method
Oral e	exam. Discussion of exercises proposed during the laboratory sessions.
Offic	e hours
On ap	ppointment.
Sust	ainable Development Goals
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