UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Informatica

2425-3-E3201Q109

Aims

The contents of the course aim to provide the student with the basic knowledge useful for designing and compiling frameworks aimed at analyzing environmental data.

Specifically, the course aims to:

- design experiments and sampling plans aimed at collecting environmental data (physical, chemical, meteorological-climatic, geological, biological and ecological),
- explore, manage and handle environmental datasets: observational, experimental, temporal and spatial data
- calculate descriptive statistics
- identify the appropriate statistical analysis to answer specific scientific questions with respect to the data collected or those available
- correctly interpret the results and represent them graphically

Contents

Exploration, management and handling of environmental datasets; analysis and graphical representation of data using an IT approach and interpretation of results.

Detailed program

In detail, the course will deal briefly from a theoretical point of view, and more extensively from a practical point of view, the following topics:

- Exploration and manipulation of data
- Graphical representation of data
- Analysis of data with normal distribution by means of linear models.
- Analysis of data with non-normal distribution by generalized linear models
- Classification methods and community analysis
- Data mining
- Spatially explicit models

Prerequisites

Concepts of Basic Statistics

Teaching form

The teaching activity will be organized in lectures (8 hours of Delivered Didactics) and practical activities (50 hours of Interactive Teaching).

Two- or three-hour lectures, in person, Delivered Didactics

- Frontal lesson, overall 1 credits, 8 h.

Three- four-hour lab activities (LIBaaS), in person, Interactive Teaching

- Activities in wired classroom, overall 3 credits, 30 h.

Four-hour practical classes, in person, Interactive Teaching

- Activities in wired classroom, overall 2 credits, 20 h

Textbook and teaching resource

An illustration of the textbooks, with their characteristics, will be provided during the first frontal lesson. Between these:

Justin C. Touchon. Applied Statistics with R. A Practical Guide for the Life Sciences.
Oxford University Press (2021) - Consigliata la versione e-book

Semester

The lectures and the practical part will be delivered in the third year of the course in the first semester.

Assessment method

Oral test.
Interview on the report carried out independently by the student on a topic assigned by the teacher.
The report consists in carrying out an exercise aimed at verifying disciplinary problem solving skills. During the test, the student will be able to consult the notes taken during the course, in its frontal part or in the practical one, the textbook(s), as well as the resources available on the net.
Passing the written test will give access to a short oral test aimed at ascertaining the level of knowledge, skills and ability on the part of the student to discuss the concepts illustrated during the frontal classes and in the practical lessons.

There are 7 ordinary exam sessions during the teaching breaks.

Office hours

By appointment upon request at the e-mail addresses:
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Sustainable Development Goals

LIFE BELOW WATER | LIFE ON LAND