



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Programming Language Laboratory (blended)

2425-1-E4102B004

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#### Learning objectives

This course will introduce the SAS system and R, with a special focus on their programming languages, to allow the student to acquire the necessary knowledge and skills to use SAS and R to analyze data.

##### *Knowledge and understanding*

This course will provide the basic knowledge and understanding on:

- Managing tabular data in SAS (dataset)
- Managing tabular data in R (data frame)
- Data analysis in SAS

##### *Ability to apply knowledge and understanding*

At the end of the course the students will be able to:

- Write basic SAS programs for data analysis
- Write basic R programs for data analysis

#### Contents

Introduction to SAS

Managing data with SAS

Introduction to R

## **Detailed program**

Introduction to SAS, Data step e Proc step. import, Proc print

Proc contents, Proc Means, output, maxid

Proc Freq

ODS

Proc Sort, Merge

Proc Format

Introduction to R: syntax and a comparison with SAS

## **Prerequisites**

None

## **Teaching methods**

The course is taught in blended e-learning.

There are 6 in-person lectures, each of 1 or 2 hours (7 hours overall), in unidirectional model, to discuss how to tackle and solve some problems. Some videos will provide the necessary notions on SAS and R. Lectures will be neither recorded nor streamed.

There are 6 exercises via e-learning, each of 2 or 3 hours (total 14 hours) where the acquired knowledge is applied to solve some problems on tabular data.

## **Assessment methods**

Written exam consisting of writing (at the PC) some short SAS programs to solve some problems. Moreover, there will be a multiple choice quiz to assess the knowledge of R.

The grading is based on correctness, completeness, simplicity of the proposed solution.

Beware that you must be registered via "segreteria online" to take the exam. If you are not registered, you will not be allowed to take the exam. No exceptions will be made.

## **Textbooks and Reading Materials**

- [“The Little SAS Book](#), SAS Institute

## **Semester**

Second

## **Teaching language**

Italian

## **Sustainable Development Goals**

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