



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Programming Language Laboratory

1920-1-E4101B004

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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:

- Structured programming
- 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.

The lectures are in a computer lab and are dedicated to introducing the notions on SAS and R, as well as to analyze a case study.

There are several exercises via e-learning, where the acquired knowledge is applied to solve some problems on tabular data.

## **Assessment methods**

Written exam consisting of writing some short SAS and R programs at the PC, to solve some problems.

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

## **Textbooks and Reading Materials**

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

## **Semester**

Second

## **Teaching language**

Italian

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