

Statistics for data science

Project A.Y. 2025/26



Motivation

- ❑ As a data scientist, you must be able to **understand and reproduce** innovations in the field, which are typically described in scientific papers
- ❑ **Understanding** means being able to comprehend and communicate to others theoretical and methodological innovation, *using appropriate formal statistical language*
- ❑ **Reproducing** means being able to re-implement portions of methods and algorithms, or to re-implement portions of the tests and experimental validation, *using the R programming language*
- ❑ The project of Statistics for Data Science will focus on practicing with those skills, applied to topics reported in selected papers
 - ❑ Selected papers available in Teams under the Shared/Project tab
 - ❑ The list of topic papers may expand up to the end of the course
 - ❑ Project is intended for students that are up-to-date with the course schedule and intend to discuss the project **by the end of July**

Group formation and paper assignment

Students autonomously cluster in groups of up to 3 members

- ❑ They select *at least* 5 papers and send a ranked list to salvatore.ruggieri@unipi.it
- ❑ The teacher assigns to the group one of the selected paper
- ❑ Deadline: **4 May 2025 h. 7:59 at the latest, but the sooner the better** (papers already assigned become unavailable for other groups)

Project delivery

The group studies the assigned paper and deliver to salvatore.ruggieri@unipi.it; francesco.giannini@unipi.it

- ❑ A presentation of up to 15 slides
- ❑ An R script with re-implementation of some methods and/or experiments
 - ❑ Both presentation and R script may focus on a portion of the paper – *no need to cover everything*

At the time of delivery, each student must have registered to an exam date (appello), only to ensure filling the student's questionnaire

Deadlines (no extension will be granted!):

Batch	Delivery deadline
1 st	19 May h. 23:59
2 nd	9 June h. 23:59
3 rd	30 June h. 23:59
4 th	12 July h. 23:59

Project and oral discussions

The group gives a 20 min talk with Q&A using the presentation slides and R script

- ❑ All members of the group must be present, no split discussions
- ❑ Q&A will regard the project only

Each member of the group takes the individual oral discussion, which may include Q&A on the project as well as Q&A on the course theory/R programming

- ❑ Students must demonstrate to be able to summarize both the theory and the software related to any of the lessons using the slides and R scripts of the lessons.

Batch	Delivery deadline	Group presentation	Individual oral
1 st	19 May h. 23:59	21 May h. 9:00	21 May h. 14:00
2 nd	9 June h. 23:59	11 June h. 9:00	11 June h. 14:00
3 rd	30 June h. 23:59	2 July h. 9:00	2 July h. 14:00
4 th	12 July h. 23:59	14 July h. 9:00	14 July h. 14:00

Grade composition

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- ❑ up to 5 points: slides writing, organization, clarity
- ❑ up to 5 points: R script quality, organization, documentation
- ❑ up to 5 points: project presentation (overall)
- ❑ up to 5 points: project discussion (individual)
- ❑ up to 10 points: individual oral discussion

This means

- ❑ 15 points assigned collectively to the group + 15 points assigned individually to each member of the group
- ❑ 10 points assigned to the offline work + 10 point assigned to the reporting of such work + 10 points assigned to the knowledge of the topics of the course
- ❑ 20 points assigned to the project + 10 points assigned to the oral discussion

Q&A

Q: What is the language of slides/presentation?

A: Slides must be in English; presentation can be in English or in Italian

Q: Can the project be discussed after July 2026?

A: No, students with assigned project that do not discuss within July 2026 will have to do the normal written+oral test.

Q: Can the project be discussed remotely?

A: No, only in presence. The room for the discussion will be at the Department of Computer Science (Building C, 2nd floor):

- ❑ 21 May: Room “Riunioni Ovest”
- ❑ 11 June, 2 July, 14 July: Room “Seminari Est”

Q: Can the project be discussed in different batches by members of the group?

A: No. Project discussion must be at the same time for all members.

Q: Can a member of a group withdraw?

A: Yes, the other members will do all of the assigned project.