TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

Algorithms, Data and Security

A.Y. 2025/26

Valeria Cardellini

Global Governance, 3rd year
Science and Technology Major

Instructor

- Valeria Cardellini
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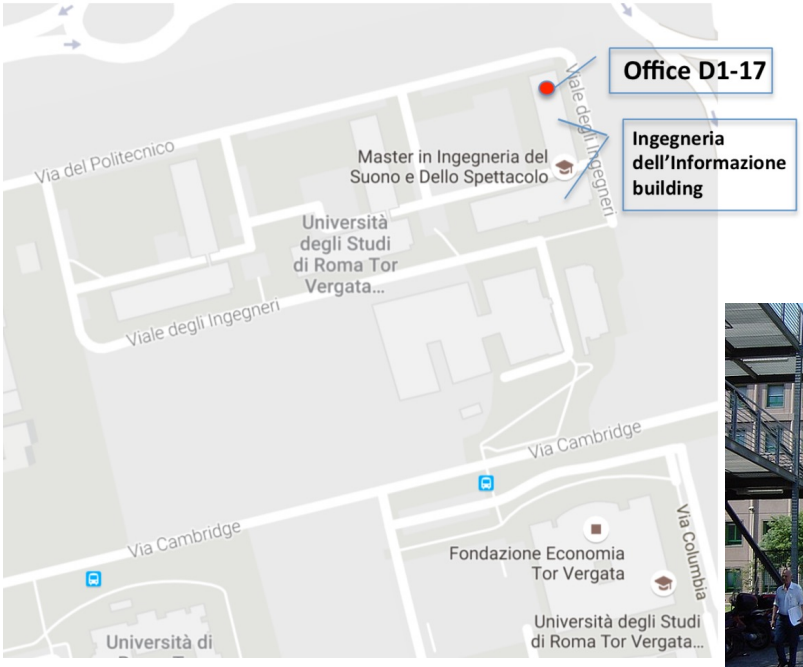
- Office hours:
  - By appointment

Instructor: office map



Class general information

- Number of credits: 6 CFU
  - 42 hours of lessons
- Class period: 3rd year, Spring semester
  - From March 3 to April 21, 2026
- Class schedule
  - Tuesday 11:00-13:00 room S6
  - Wednesday 11:00-13:00 room S6
  - Thursday 9:00-11:00 room S6
  - Check the timetable https://economia.uniroma2.it/ba/globalgovernance/corso/lezioni/1282/

Class web site

https://economia.uniroma2.it/ba/globalgovernance/corso/2636/

- (Almost) everything will be available there:
  - Syllabus, slides, exercises, additional material, exam information, …
- Check the web site regularly
  - You will often find answers to your questions there

Course objectives

- Introduce students to the concept of algorithmic intelligence
- Provide a foundational toolkit of algorithmic and quantitative method to analyze data and extract value from data
- Introduce the basic principles of cybersecurity

Main topics

- Fundamentals in algorithms
- Fundamentals in data organization
- Recommender systems
- Social networks
- Cybersecurity

Teaching material

- Lecture notes and further course material will be made available throughout the course on the class web site
- Articles, scientific papers, videos, etc.
  - See last slides of each topic for references
- Suggested book, but none covers all topics
  - T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein. Introduction to Algorithms, 4th ed., MIT Press, 2022 https://mitpress.mit.edu/9780262046305/introduction-to-algorithms/

Assessment and grading

- Planning to do:
  1. Midterm written exam: 42.5% of final grade
  2. Final written exam: 42.5% of final grade
  3. Presentation on a social network use case: 15% of final grade
- Option:
  1. Single full written exam (scheduled dates): 85%
  2. Presentation as above: 15%

- Non-attending students will have an extra question on the written exam

- Check the syllabus on the course website for details