

# Algorithms, Data and Security

A.Y. 2023/24

**Valeria Cardellini**

Global Governance, 3rd year  
Science and Technology Major

## Instructor

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- Valeria Cardellini
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- Email: use [ADS] in subject line
- Office hours:
  - By appointment

# Instructor: office map

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## Class general information

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- Number of credits: 6 CFU
  - 42 hours of lessons
- Class period: 3rd year, Spring semester
  - From March 4 to April 22, 2024
- Class schedule
  - Monday 9:00-11:00 room S6
  - Tuesday 11:00-13:00 room S6
  - Wednesday 11:00-13:00 room S6
  - Check the timetable [economia.uniroma2.it/ba/globalgovernance/corso/lezioni/1282/](https://economia.uniroma2.it/ba/globalgovernance/corso/lezioni/1282/)

# Class web site

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<https://economia.uniroma2.it/ba/globalgovernance/corso/lezioni/1282/>

(link on my Web page)

- (Almost) everything will be there:
  - Syllabus, slides, exercises, other material, info about exams, ....
- Check often the web site
  - You will often get answers to your questions

# Educational objectives

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- To introduce students to the notion of algorithmic intelligence, by providing a **basic toolkit of algorithmic and quantitative methods to analyse and extract value from data**, in particular Big data
- To introduce basic notions of **cybersecurity**, **cryptocurrencies** and **Distributed Ledger Technology**

# Main topics

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- Fundamentals in algorithms and data organization
- Recommender systems
- Social networks
- Big data and Cloud computing
- Cybersecurity
- Cryptocurrencies (Bitcoin and Blockchain)

# Teaching material

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- 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
- Some suggested book, but none covers all topics
  - T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein. [Introduction to Algorithms](#), 4<sup>th</sup> ed., MIT Press, 2022.

# Exam

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- Planning to do:
  1. Midterm written exam: 42.5% final grade
  2. Final written exam: 42.5% final grade
  3. Presentation about a use case on social network graphs: 15% final grade
- Otherwise, you can take the full written exam in one of the scheduled dates (plus the presentation)