

Algorithms, Data and Security

A.Y. 2024/25

Valeria Cardellini

Global Governance, 3rd year
Science and Technology Major

Instructor

- Valeria Cardellini
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 - By appointment

Instructor: office map



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Class general information

- Number of credits: 6 CFU
 - 42 hours of lessons
- Class period: 3rd year, Spring semester
 - From March 3 to April 16, 2025
- 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/

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Class web site

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

- (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

- 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

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

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
- Some 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/>

Exam

- 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, full written exam in one of the scheduled dates (85%), plus presentation (15%)
- For non-attending students, there will be an additional question
- Check syllabus on web site