

Information Systems and Network Security

A.Y. 2020/2021

Gianpiero Monaco

Email: gianpiero.monaco@univaq.it

Web: <http://www.gianpieromonaco.com/>

Practical information

- **Timetable:** (October 5, 2020 - January 22, 2021).
 - Wednesday: from 10.10 to 10.50 and from 11.00- 11.40 (room A1.1 and Online. Team code: 6ta6iy3);
 - Thursday: from 10.10 to 10.50 and from 11.00- 11.40 (room A1.1 and Online. Team code: 6ta6iy3).
- **Web Page of the course (where you can find all the information, news, links to material, slides, exam results, etc):**
<http://gianpieromonaco.com/ISNS2021.html>
- **Students' reception:** Online by appointment on the Team called: "Gianpiero Monaco – Ricevimento Studenti (Students' Reception)".
Students are invited to arrange the day and time of the meeting by e-mail and therefore to send an e-mail preventively.

Course Structure

The course is made of the following parts:

- Basics of cryptology: introduction.
- Basics of cryptology: symmetric cryptography, hash functions, asymmetric cryptography.

Mid term exam (not mandatory). (Tentative)

- Introduction to information systems, introduction to cloud computing.
- Algorithmic Issues arising in information systems: envy-free scheduling.
- Algorithmic Issues arising in Information Systems: revenue maximization envy-free pricing problem.

Didactic material

- I will provide lecture notes (slides) and extra didactic material (mandatory).

Further reading books (not mandatory):

- Charlie Kaufman, Radia Perlman, Mike Speciner: “Network Security: Private Communication in a Public World (2nd Edition)”. Prentice Hall, 2002.
- Peter Brucker: “Scheduling Algorithms”. Springer, 2007.
- David P. Williamson and David B. Shmoys: “The Design of Approximation Algorithms”. Cambridge University Press.
-

(Tentative) Schedule

- Basics of Cryptology. **(2-3 lectures)**
 - Basics of cryptology: symmetric cryptography, hash functions, asymmetric cryptography **(7-9 lectures)**
-

Mid term exam

- Introduction to Information Systems. **(1-2 lectures)**
- Algorithmic Issues arising in Information Systems: Scheduling Algorithms; Envy-Free Scheduling. **(5-7 lectures)**
- Algorithmic Issues arising in Information Systems: Revenue Maximization Envy-Free Pricing Problems. **(4-5 lectures)**

Part of the lectures will be dedicated to exercises.

Prerequisites

- **Students should have general knowledge of:**
Discrete Mathematics, Computer Networks,
Algorithms and Complexity.

Guideline

- In order to pass the examination, students have to study and understand lecture notes and extra material provided by the instructor.

(Tentative) Exams

- Final written examination (mandatory!)
- Followed by an oral examination if:
 - The instructor needs more inputs in order to make a proper assessment.
 - The student wants to improve the mark obtained in the written examination.

Notes:

- this is only possible if the mark obtained in the written examination is ≥ 18
- the oral examination can slightly move (3-5 points) the final mark up or down (or not moving it at all)!