

COM-402

Information security and privacy

Troncoso Carmela, Hubaux Jean-Pierre, Oechslin Philippe

Cursus	Sem.	Type
Computational science and Engineering	MA2, MA4	Opt.
Computer and Communication Sciences		Obl.
Computer science	MA2	Obl.
Cybersecurity	MA1	Obl.
Data Science	MA2, MA4	Obl.
Data science minor	E	Opt.
Financial engineering	MA2, MA4	Opt.
SC master EPFL	MA2, MA4	Obl.

Language of teaching	English
Credits	6
Session	Winter, Summer
Semester	Spring
Exam	Written
Workload	180h
Weeks	14
Hours	6 weekly
Courses	4 weekly
Project	2 weekly
Number of positions	

Summary

This course will provide a broad overview of information security and privacy topics, with the primary goal of giving students the knowledge and tools they will need "in the field" in order to deal with the security/privacy challenges they are likely to encounter in today's "Big Data" world.

Content

- Data protection concepts: access control, encryption, compartmentalization
- Intrusion/hacking techniques, intrusion detection, advanced persistent threats
- Practices for management of personally identifying information
- Operational security practices and failures
- Data anonymization and de-anonymization techniques
- Information flow control
- Differential privacy
- Cryptographic tools for data security and privacy
- Policy, ethics, and legal considerations

Keywords

security, privacy, protection, intrusion, anonymization, cryptography

Learning Prerequisites**Required courses**

Basic programming course or comparable demonstration of basic programming skills

Learning Outcomes

By the end of the course, the student must be able to:

- Understand the most important classes of information security/privacy risks in today's "Big Data" environment
- Exercise a basic, critical set of "best practices" for handling sensitive information
- Exercise competent operational security practices in their home and professional lives
- Understand at overview level the key technical tools available for security/privacy protection

Expected student activities

Attending lectures, solving assigned problems and "hands-on" exercises, reading and demonstrating understanding of

provided materials.

Assessment methods

Continuous assessment via homework exercises, and final written exam.