

COM-402

Information security and privacy

Payer Mathias

Cursus	Sem.	Type
Communication systems minor	H	Opt.
Computational science and Engineering	MA1, MA3	Opt.
Computational science and engineering minor	H	Opt.
Computer and Communication Sciences		Opt.
Computer science minor	H	Opt.
Computer science	MA1, MA3	Obl.
Cyber security minor	H	Opt.
Cybersecurity	MA1, MA3	Obl.
Data Science	MA1, MA3	Obl.
Financial engineering	MA1, MA3	Opt.
Learning Sciences		Opt.
SC master EPFL	MA1, MA3	Obl.
Statistics	MA1, MA3	Opt.

Language of teaching	English
Credits	8
Session	Winter
Semester	Fall
Exam	Written
Workload	240h
Weeks	14
Hours	6 weekly
Courses	3 weekly
Exercises	1 weekly
Project	2 weekly
Number of positions	

Summary

This course provides an overview of information security and privacy topics. It introduces students to the knowledge and tools they will need to deal with the security/privacy challenges they are likely to encounter in today's world. The tools are illustrated with relevant applications.

Content

- Overview of cyberthreats
- Basic exploitation of vulnerabilities
- Authentication, access control, compartmentalization
- Basic applied cryptography
- Operational security practices and failures
- Machine learning and privacy
- Data anonymization and de-anonymization techniques
- Privacy enhancing technologies
- Blockchain and decentralization

Keywords

security, privacy, protection, intrusion, anonymization, cryptography

Learning Prerequisites

Required courses

COM-301 Computer security
Basic systems programming (in C/C++) or better
Basic networking knowledge
Good scripting knowledge (Python)

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
- Understand the key technical tools available for security/privacy protection
- Exercise competent operational security practices

Expected student activities

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

Assessment methods

- continuous control : 30% of the grade
- final exam : 70% of the grade

Resources**Moodle Link**

- <https://go.epfl.ch/COM-402>