EPFL

COM-402

Information security and privacy

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

Language of teaching	English
Credits	6
Session	Winter
Semester	Fall
Exam	Written
Workload	180h
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 Big Data world. The tools are illustrated with relevant applications

Content

- Overview of cyberthreats

- Exploiting 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

Basic Python programming or better

Basec networking knowledge

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, quizzes , midterm exam and final written exam.