

COM-402

**Information security and privacy**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Computational science and Engineering	MA1, MA3	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.
Data science minor	H	Opt.
Financial engineering	MA1, MA3	Opt.
Learning Sciences		Obl.
SC master EPFL	MA1, MA3	Obl.
Statistics	MA1	Opt.

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

**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

COM-301 Computer security  
Basic Python programming or better  
Basic 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
- 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>