EPFL

COM-301 | **Computer security**

Bugnion Edouard

Cursus	Sem.	Type
Communication systems minor	H	Opt.
Communication systems	BA5	Obl.
Computer science minor	H	Opt.
Computer science	BA5	Obl.
Cyber security minor	H	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
Exercises	1 weekly
TP	1 weekly
Number of positions	

Summary

This is an introductory course to computer security and privacy. Its goal is to provide students with means to reason about security and privacy problems, and provide them with tools to confront them.

Content

The goal of this course is to introduce students to security engineering. The course will help students to think as an adversary so that they can analyse systems and establish security policies. We will cover a number of common security mechanisms at all layers, and learn their properties and limitations.
Core topics:

- Security design principles
- Access control
- Authentication mechanisms
- Applied cryptography
- Sotware and Network security
- Privacy

Keywords

Security Privacy

Learning Prerequisites

Recommended courses

CS-233a or CS-233b Introduction to Machine Learning (for programming)
COM-208 Computer Networks
CS-323 Operative systems

Important concepts to start the course

Basic notions TCP/IP
Basic notions programming

Learning Outcomes

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

- Analyze systems for security
- Decide on security mechanisms to apply
- Establish a security policy

Teaching methods

Pre-recorded lectures
Practical assignemnts interactivel resolved in class using the concepts learned in the lectures
Written exercises to reaffirm the learning of the course
Practical programming homeworks to develop attacks and defenses

Expected student activities

Attending lectures, solving exercises, reading and demonstrating understanding of provided materials.

Assessment methods

- Take home exams (80%)
- Practical homeworks (20%)

Supervision

Office hours	Yes
Assistants	Yes
Forum	Yes

Resources

Bibliography

Computer security by Dieter Gollmann

Security Engineering by Ross Anderson

Computer Security: Principles and Practice by Stallings and Brown

Ressources en bibliothèque

- Security Engineering by Ross Anderson
- Computer security by Dieter Gollmann
- Computer Security: Principles and Practice by Stallings and Brown

Moodle Link

- https://go.epfl.ch/COM-301

Prerequisite for

- COM-402 Information security and privacy
- CS-523 Advanced topics on privacy enhancing technologies