Computer Science Specialization: Security

The Problem:
- Information Technology is ubiquitous and so is cybersecurity
- Most software will, if you like it or not, be executed in adversarial environments
- Every system is suffering from "security decay"
- New zero-day vulnerabilities effect the overall cybersecurity of a system
- Cybersecurity is not just a technical but a socio-technical challenge with human factors
- Cybersecurity breaches affect confidentiality, integrity, and availability of systems

The Cybersecurity Specialization enables you to:
- Build secure software suitable for use in adversarial environments
- Apply cryptographic methods and algorithms
- Define and prove new cryptographic methods and protocols correct
- Apply formal tools to improve the cybersecurity of a system
- Design high-quality security infrastructures by considering the human factor
- Analyze the security of existing socio-technical systems
- Become an expert in ethical hacking
- Learn about advanced topics in cybersecurity, such as information flow control, adversarial AI, zero trust, election security, and others

Career Prospects:
Graduates, who specialize in cybersecurity are well-thought after by industry, public institutions, and academia. The graduates of this cybersecurity specialization will be uniquely qualified to work as penetration testers, security consults, and protocol designers who guarantee properties, such as privacy-preservation, verifiability, or accountability. The graduates may help draft sensible (as opposed to stupid) legislations that may regulate the future Information Technology sector. In the past companies have contacted us to recruit students in the cybersecurity specialization before they graduated! We enable our students to perform at the highest academic levels.

Prerequisites:
Students taken the cybersecurity specialization should have taken advanced programming and should have strong background in mathematics, including probability theory. Moreover, optionally, students could have taken a course in computer architecture, operating systems, formal methods, or social science.