

Informatics Board of Studies - Course description update  
Course - Computer Security (INFR10067)  
Course organiser - Myrto Arapinis  
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### **Course description**

The goal of this course is to introduce students to fundamental security concepts and offer them working knowledge of threats and counter-measures. The topics covered in the course are:

- Introduction: fundamental concepts, access control models, threat modelling
- Network security: basic networking concepts, DoS, Transport layer security, Link layer security, DNS attacks, Firewalls, Intrusion detection
- Usable security: basic human factors, warning design, phishing, authentication, device authentication
- Cryptography: symmetric ciphers, asymmetric ciphers, MACs and hash functions, digital signatures
- Cryptographic protocols: identification, authentication and key agreement, SSL/TLS, anonymity protocols, TOR
- OS security: OS concepts, memory and filesystem, access control, file permissions, memory safety, stack-based buffer overflows
- Malware: viruses, trojan horses, worms, rootkits
- Web security: WWW basics, client-side attacks, session hijacking XSS, CSRF, defenses, server-side attacks, SQL injection, RFI, LFI

### **Learning outcomes**

On completion of this course, the students will be able to:

1. Recognise the common security threats against computer systems, and know at least the basic mechanisms to address them
2. Apply techniques and design principles underlying security solutions including aspects of cryptography, security protocols, and secure programming
3. Be able to complete basic security analysis of a computer system
4. Be able to use the World Wide Web to research the latest security alerts and information

**Reading list**

Introduction to Computer Security (First Edition), Michael Goodrich and Roberto Tamassia, Pearson.

**CS vs SP**

CS teaches a breadth of concepts with minimal depth in each area. We expect that SP will allow students to further develop the depth in that area. CS is intended to spark interest in a wide range of security topics including secure programming. In the secure programming module we only teach very basic web security and memory safety attacks and defenses. In SP this is further developed such that a student would actually be able to complete a more advanced analysis of a piece of software.

Regarding evaluation, we are coordinating with SP to ensure no overlap in examined material.