Computer Security I (COMP0054)

Aims:
This module provides an introduction to computer security concepts and techniques. It covers core security principles to engineer systems that provide properties like confidentiality, integrity or availability, despite the efforts of malicious entities to subvert them.

Learning outcomes:
Students will learn how to recognise security properties of systems, as well as formulate security policies, and model the threats they may face. Through exposure to a number of established industry and government security mechanisms and design patterns, they will be able to select appropriate controls to guarantee that the security policies are implemented robustly and may resist efforts to subvert them. Conversely, students will gain skills in analysing computer systems, and developing strategies to bypass security controls.

Content:
The first half of the course covers the basic principles, security policies, access control (theory and practice); hardware and OS security fundamentals which underpin security of systems. Then we dive into the details of various technical protection mechanisms and computer attacks including hardware, network and operating system security attacks; We learn about defensive technology in high-integrity systems. We study basic attacks in web security. We study user authentication and identification and how applied cryptography is used in TLS and network security. The module provides strong foundations in security engineering, and enables students to more easily follow other modules in Information Security and in Applied Cryptography.

Requisites:
In order to be eligible to select this module, a student must be registered on a programme for which it is a formally-approved option or elective choice AND have

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taken the equivalent of the core modules of a UK-equivalent Honours Degree (or higher) in the field of Computer Science (in particular, operating systems, networking, computer architecture.)

Some mathematics are useful to know: discrete mathematics, probability, logic, partial orders, entropy.
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Key information

Year: 2019/20
Credit value: 15 (150 study hours)
Delivery: UGM L7, Campus-based
Reading List: View on UCL website
Tutor: Dr Nicolas Courtois
Term: Term 1
Timetable: View on UCL website

Assessment

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