ELECS425F
Computer and Network Security

Lec 00

Objective

The course first covers principles of computer and network security. It then discusses various attack techniques and how to defend against them. Topics include network attacks and defenses, malicious software, host security, application security, network security, data security, cryptography and encryption.

CILO

1. Identify the major types of security threats and the associated attacks.

2. Explain security weaknesses in existing networking protocols.

3. Describe common network attacks and evaluate defense tools and countermeasures.

4. Explain the role of cryptography in computer and network security, the major types of cryptographic algorithms, and typical applications of cryptography.

5. Evaluate the types of web application attacks and feasible ways to defend against each of them.

Teachers

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- Teaching time: week 1- 8, week 13

Dr. Yaru FU
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- Teaching time: week 9 -12

Course Schedule & Topics

1. Computer and network security basics (week 1)
2. Cryptography and encryption (Week 2 - 4)
3. Network security (Week 5 - 6)
4. Web and data security (Week 7 - 8)
5. Network security in the physical layer (Week 9 - 12)
6. Review (Week 13)

Assessment

a. Assignments 20%

    3 assignments: programming/virtual machine/calculation

b. Test 20%

    TBC, wait for university's further update before the end of Feb

c. Examination 60%

    closed-book, 2-hour

- [***End-of-term examinations*** will remain unchanged and take the form of on-campus invigilated examinations.]

Arrangement of first four weeks of the Term:

- ***Lectures and Tutorials*** will be delivered in **online mode for the first week of classes** (i.e. 31 January – 6 February). For the **second to fourth week of the term,** (i.e. 7 – 27 February 2022), lectures and tutorials will be delivered in **mixed-mode** with face-to-face and online teaching simultaneously. To maintain social distancing, students are divided into two teaching groups, "Odd-day" and "Even-day", to take classes physically and online alternately on odd and even calendar days, as follows:

- - "**Odd-day**" group: Students will attend classes face-to-face on odd calendar days (i.e. Feb 7, 9, 11 and so on) and online on even calendar days (i.e. Feb 8, 10, 12 and so on), where classes are scheduled.

- - "**Even-day**" group: Students will attend classes face-to-face on even calendar days (i.e. Feb 8, 10, 12 and so on) and online on odd calendar days (i.e. Feb 7, 9, 11 and so on), where classes are scheduled.