Welcome to Network Security (NETSEC)

Introduction to the Course

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Course Team

Stockholm University

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Labs, supervision, examiner

Schedule

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- Lectures: 8 lectures, from Week 4, 5 + Week8, 9
- Labs: 2 labs, Week 6, 7
- Week 10: reserved
- Written exam:
  - Mar.16, Wednesday, 2022 (Week 11, regular)
  - Apr. 23, Saturday, 2022 (resit, Week 16)

Course Goals - Motivation

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- Internet and networks were designed for
  - co-operation and collaboration
  - sharing and distribution of knowledge
  - inherently democratic behavior
  - tolerance
  - very few limitations
- Techniques making Internet successful
  - Unified and efficient TCP/IP protocols
  - Layered architecture
  - Various transmission techniques
  - Internet core, educational and research network (GEANT, GEANT2, GENI, CERNET, …)
  - Openness
- Problems
  - Quality of service
  - Management
  - **Security**
  - …

Learning Goals

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After completing the course, you will be able:

- Define the fundamental concepts of network security and describing how they work
- Understand the capabilities and limitations of secure systems
- Demonstrate the usage of relevant security tools
- Discuss and explain the issues that go into the design of a secure network
- Develop strategies for ensuring appropriate levels of security
- Understand the concepts and research challenges in the area of network security

More about the Course Goals

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- The course is oriented more towards theoretical than applied studies
  - Students can expect to discover productive means to reason within the subject matter rather than how to secure specific systems.
  - Practical exercises are included as a means to grounding understanding in practical experience as well as to illustrating and demonstrating relevant concepts.

Course Organization

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- Lectures
  - Reserved lecture/supervision
- Labs
  - Two assignments
  - Three time slots of supervision
  - In groups (3 students/group)
- Examinations

Lectures

- 8 lectures
  - According to the timetable
  - Recorded videos, publish in-time
  - Material will be given online
  - Q&A forum

Lecture content

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- **L1**: Introduction
  - Introduction to the course
  - Introduction to network security
- **L2:** Network security architecture + Application of cryptology in networks
- **L3+L4:** Network attacking techniques
- **L5+L6:** Network defending techniques
- **L7+L8**: Network security applications

Labs

- Two labs
- Work done in 3-person groups
- Registration of groups: Week 1+Week 2

Examinations

- 7.5 course credits
  - 4 credits are for individual theoretical written examination.
    - Final examination: A-F
  - 3.5 credits are awarded for passes in group based practical assignments.
    - Labs: P/F

Written examinations

- Intended: **not permitted to have any extra material at this exam**.
- ECTS scale
  - F < 45.0%
  - Fx45.0% –49.9%
  - E 50.0%–59.9%
  - D 60.0% –69.9%
  - C 70.0% –79.9%
  - B 80.0% –89.9%
  - A 90.0% -100%

Course Material -1

- Course book:

  Network security essentials: applications and standards
  Authors: William Stallings
  Edition: 5 or later
  Publisher: Prentice Hall
  Year: 2015
  ISBN: 9780134085043
- On-line sources: slides, videos…
- Fora (Announcements, course discussions, open forum)
  - Q&A for each part of lectures

Course Material - 2

- **Background reading:** literatures posted in the respective conferences such as
  - Popular articles
  - Scientific papers
  - White papers
  - Standards

Communication during the course

- Use the fora in iLearn primarily, be sure to use the most appropriate one
- Do not use the message function in iLearn
- For issues not relevant to other students, e-mail the teachers

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Wish you a profitable work, an enjoyable and a challenging learning experience!

Thank you!