JÖNKÖPING UNIVERSITY
School of Engineering

Course introduction

Information Security, 7,5 ECTS

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General course information

- All lecture notes and assignments will be available in Canvas
- We use a book by:
  - Pfleeger, C. P., Pfleeger, S. L., & Margulies, J. (2015). Security in Computing (Fifth ed.): Prentice Hall.
  - Book exist as a physical book, but also as an e-book.
- People involved
  - Erik Bergström (lecturer, seminars)
  - Sonny Johansson (examiner)
  - Håkan Sonesson - Chief Information Security Officer (CISO)@JU

About me

- PhD in Information Security Management
- Started @ JTH 2019
- 20+ years of edu in dcom, infosec (all levels)
- Work exp (IT management and sysadmin)

Course overview

- Topics:
  - Introduction to information security
  - Authentication and access control
  - Privacy, legal issues and ethics
  - Programs programming
  - Web security
  - Operating systems security
  - Network security
  - Management
  - Management in practice (guest lecture)
  - Cryptography

Intended learning outcomes

Intended learning outcomes	Examined elements	Learning activities
Display knowledge of basic concepts, principles, laws, models, and standards within the area of information security	Written examination	Lectures
Display knowledge of recent cases of data breaches and/or information leakage, and show an understanding of the underlying reasons	Written examination, seminar	Lectures, seminars
Display knowledge of how information security is practiced in an organization	Written examination	Lectures
Display knowledge of technical and administrative security mechanisms	Written examination	Lectures
Demonstrate the ability to search for and present relevant research results related to current events and/or trends within the field of information security	Seminar	Lectures, seminars
Demonstrate the ability to analyze and reflect over current events and/or trends within the area of information security	Seminar	Lectures, seminars
Demonstrate the ability to reflect over how vulnerabilities in information systems affect organizations and society	Written examination, seminar	Lectures, seminars

Reading list

Date	Teacher/guest	Learning activities	Course literature
Week 43	Erik Bergström	Module 1 - Course introduction	Chapter 1 – Introduction
Week 43	Erik Bergström	Module 2 – Authentication and access control	Chapter 2.1 - Authentication Chapter 2.2 – Access control
Week 44	Erik Bergström	Module 3 – Privacy, legal issues and ethics	Chapter 9 - Light Chapter 11 – Light
Week 44	Erik Bergström	Module 4 – Programs and programming	Chapter 3.1 - Unintentional (nonmalicious) programming oversights (light) Chapter 3.2 – Malicious code Chapter 3.3 – Countermeasures (199-216 light)
…	…	…	…

For the complete reading list, see the study guide.

Detailed time plan and content

Date	Teacher/guest	Learning activities	Course literature
Week 43	Erik Bergström	Module 1 - Course introduction	Chapter 1 – Introduction
Week 43	Erik Bergström	Module 2 – Authentication and access control	Chapter 2.1 - Authentication Chapter 2.2 – Access control
Week 44	Erik Bergström	Module 3 – Privacy, legal issues, and ethics	Chapter 9 - Light Chapter 11 - Light
Week 44	Erik Bergström	Module 4 – Programs and programming	Chapter 3.1 - Unintentional (nonmalicious) programming oversights (light) Chapter 3.2 – Malicious code Chapter 3.3 – Countermeasures (199-216 light)
Week 44	Erik Bergström	Supervision	
Week 45	Erik Bergström	Quiz 1	Monday 09.30-09.40 (Module 1-2)
Week 45	Erik Bergström	Module 5 – Web security	Chapter 4
Week 45	Erik Bergström	Supervision	
Week 45	**Seminar 1, and hand in the summary**		

Detailed time plan and content

Week 46	Erik Bergström	Module 6 – Operating systems	Chapter 5.1 - Security in operating systems (not 298-308) Chapter 5.2 - Security in the design of operating systems (316-329 light) Chapter 5.3 - Rootkit (light)
Week 46	Erik Bergström	Supervision	
Week 46	Erik Bergström	Module 7 – Network security	Chapter 6.1 – Network concepts Chapter 6.2 - Threats to network communications Chapter 6.3 – Wireless network security (WEP is light) Chapter 6.4 - Denial-of-service Chapter 6.5 - Distributed denial-of-service Chapter 6.6 - Cryptography in network security Chapter 6.7 - Firewalls Chapter 6.8 - Intrusion detection and prevention systems Chapter 6.9 – Network management

Detailed time plan and content

Week 47	Erik Bergström	Module 8 – Management	Chapter 10 – Management and incidents
Week 47	Erik Bergström	Supervision / Mandatory check with supervisor / Registration in Canvas	
Week 47	Erik Bergström	Quiz 2	Monday 09.30-09.40 (Module 3-6)
Week 48	Håkan Sonesson	Guest lecture	Information security management in practice
Week 48	**Seminar 2, and hand in the report**		
Week 48	Erik Bergström	Module 9 - Cryptography	Chapter 2.3 Chapter 12 – Light (except 768-774, 777-788, and 799-802)
Week 49	Erik Bergström	Supervision	
Week 49	Erik Bergström	Quiz 3	Monday 09.30-09.40 (Module 7-9)
Week 50	**Seminar 3, presentation, and hand in the report**		
Week 51	**Written examination (16/12)**		

Seminars – 2.5 ECTS

- Presented separately (but briefly)
- Three parts/assignments
  - Seminar 1 - Ethical overview
    - Submit a summary (individual)
  - Seminar 2 – Encryption
    - Submit short report (individual)
  - Seminar 3 - Threats and vulnerabilities
    - Submit larger report (two-and-two)

Examinations and criteria

Examined elements	Grading criteria grade 3/Pass[2]	Grading criteria grade 4	Grading criteria grade 5
Written examination[1]	>=50%	>= 70%	>=85%
Seminars	Pass[3]		

[1] Determines the final grade of the course, which is issued when all course units have been passed.

[2] It is possible to obtain up to 6% by passing three quizzes (3*1p). These points count towards getting the grade 3/Pass. The points do not count towards achieving a higher grade than 3, and only for the first exam (not re-exams).

[3] To receive a passing grade, the following three parts should be graded with a Pass:
(1) Seminar 1: summary graded as pass and active participation in the seminar is required,
(2) Seminar 2: report graded as pass and active participation in the seminar is required, and
(3) Seminar 3: report graded as pass and participation in the presentation required.

The written exam

- Made in Inspera
- ~30-50% auto-corrected questions
- ~50-70% ”essay” questions
- Remember the bonus points =)

Examined elements	**Grading criteria grade 3/Pass[2]**	**Grading criteria grade 4**	**Grading criteria grade 5**
Written examination[1]	>=50%	>= 70%	>=85%
Seminars	Pass[3]		

Bonus points (quizzes)

- It is not mandatory, but give up to 6% bonus
- 10 multiple-choice or similar questions
- Monday 09.30-09.40 in Canvas
- 10 minutes to complete the quiz
- One question at the time
- One try

Example questions

- Auto-corrected:

  - (1p) What sentence would best describe a firewall?
    1. A device filtering packets.
    2. A device increasing entropy.
    3. A device for filtering spikes.
    4. A device for amplification of signals

  - (1p) Which of the following assets are an example of an intangible asset?
    1. A physical book
    2. A database
    3. The company brand
    4. An electronic file

Example questions

- Essay:
  - (3p) Explain the terms risk, vulnerability and threat and describe how the terms relate to each other.
  - (2p) What is cross-site scripting (XSS), and how can it be mitigated?

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