

Forum Securitatis Courses

IT and cyber security

Description

Our society relies on that our IT systems are up and running 24/7. We depend on that they are robust and secured, that financial systems, logistics, and the power supply chain works, that there is drinking water in the tap and that various waste products are taking care of. Security includes not only system availability, but also that information is distributed to the intended receivers and no other, and that information has not been modified in an unauthorized way. These are all aspects of IT and cyber security.

This course provides an overview of IT and cyber security, its threats and how to prepare and defend against attacks. The course also describes the properties of industrial information and control systems (SCADA). What constitutes a sound culture for information security among users is described, and a method for evaluation of the IT and cyber security in a technical system is described. Each lecture contain a mix of theory and examples from practice. The lecturers are the experts from FOI's research group for IT security.

Organization

The course is divided into two parts; an introductory part (1 ECTS credit) and an advanced part (2 ECTS credits).

The introduction contains lectures on the fundamentals of IT/cyber security and an overview of the threats (6-7 hours), and a written report of approximately one page (20 hours). The report shall contain a reflection of the subject, preferably with a connection to the authors own research or work.

The advanced part describes the threat-protection duel further, introduces the concept of a sound information security culture, and methods for evaluation of IT and cyber security. It contains additional lectures (16 hours), a project assignment (60 hours), and a workshop where a projects are presented (4 hours). In the assignment, approximately 4-6 pages, the students are expected to select an IT/cyber security related topic and apply on the students' own research as well as put in the context of a relevant IT/cyber security scenario. The report can be written as a conference paper.

Examination

Introduction part (1 ECTS credit): active participation in lectures and a written report.

Advanced part (2 ECTS credits): active participation in lectures, a written report, and a presentation of the project at the final workshop.

Literature

Selected reports and papers handed out.

Target group

All students in Forum Securitatis. The course is open to other students and participants from industry based on availability.

Prerequisites

The introductory part has no prerequisites.

Course language: English or Swedish (if all participants speak Swedish).

Comparison with related courses at Linköping University

The Department of Electrical Engineering also provides basic courses on IT/cyber security (course codes TSIT01 and TSIT02). Similarities between the courses are the fundamental definition of IT and cyber security and lectures about access control.

This course looks at the topic of IT and cyber security in a wider sense (hence, less technical depth) and also contain aspects on man-technology-organization. Extra topics in the Forum Securitatis course are:

- Hands-on demonstration on system vulnerability
- Problems concerning SCADA systems
- Assessment of information security risks
- Embedded systems
- The organization's culture and how this affect the IT and cyber security
- Trust in the system's security

Contact persons

Name	Function	E-mail
Christina Grönwall	Course organizer	christina.gronwall@liu.se
Christina Grönwall	Examiner	christina.gronwall@liu.se

Schedule

	Subject	Time	Lecturer
1. Introduction			
1	Introduction Basics in IT/cyber security.	2h	Lars Westerdahl/David Lindahl
2	Malicious code Actors, targets and capacity	2h	David Lindahl
3	Demonstration of IT security A practical case: scenario and discussion	2h	David Lindahl
4	Invited practitioner: Safe systems in reality, typical pitfalls.	1h	Personnel from Modio AB (https://www.modio.se/)
2. Advanced part 1			
5	Access control	1h	Lars Westerdahl
6	Cyber security in industrial information and control systems	2h	Lars Westerdahl/ David Lindahl
7	Attacks and defence	2h	Hannes Holm
8	Embedded systems and trust	1h	Mikael Wedlin
3. Advanced part 2			
9	The role of humans in information security work	1h	Teodor Sommestad
10	Enforcing or encouraging secure user behavior	1h	Teodor Sommestad
11	Information security work	1h	Amund Hunstad
12	Assessment of information security risks	1h	Jonas Hallberg
13	Simplified security assessment.	1h	David Lindahl

14	Concluding remarks <i>Summary and introduction to advanced study project.</i>	1h	Jonas Hallberg/Amund Hunstad & Christina Grönwall
4. Advanced part, workshop			
15	Presentation and discussion of advanced study projects.		Jonas Hallberg/Amund Hunstad & Christina Grönwall

Dates and place for the course 2016

Introduction: November 28, 8:15-16:00

Advanced part 1; December 5, 9:15-16:00

Advanced part 2: December 12 9:15-16:00

Workshop: January-February 2017, date is set by participating students and lecturers.

Room: Algoritmen, Building B, Entrance 29, Campus Valla, Linköping University. See map below.

Travel: Buss 12 and 20 goes regularly from the Railway station to Campus Valla.

