FEP3250 Bygga säkra nätverkssystem 8,0 hp

Building Networked Systems Security

Fastställande

Betygsskala

G

Utbildningsnivå

Forskarnivå

Särskild behörighet

Eligible students should be already prepared by a basic course on network security, systems security, or Internet security. Preparation on most of, or all if possible, among data networks, operating systems, wireless networks, Internet-working, is presumed. If equivalent knowledge was acquired through a different path, students should contact the instructor. Following the companion “Networked Systems Security” course is not a strict requirement, but it is strongly encouraged for continuity and best results.

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

This project-/implementation-/lab- based course intends to enhance and extend the understanding of modern networked systems security. It builds on the preparation of students through the “Networked Systems Security (NSS)” course (EP2500/EP3200). It seeks to hone the ability to deal with open-ended, real-world engineering problems, as well as prepare for independent work on related topics.

At the end of the course, students shall be able to:

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(i) Implement networked systems security solutions, addressing specific security requirements and system constraints.

(ii) Analyze and evaluate security mechanisms they implemented, in terms of the level of the security they provide and the overhead they incur.

This course is planned primarily for students in their fourth or fifth year, i.e., the beginning of their second year in their MSc programs. The course is open to PhD students too. It naturally complements the two other closely related courses, the NSS and the “Advanced Networked System Security (ANSS)” course. Especially for PhD designed additional assignment problems, dedicated recitation slots, individual consultation with the teaching team; and to the extent possible personalization of the project objectives, to align them to the study plan of the PhD student.

Kursinnehåll

The course content will be detailed at the start of the course each year. Basically, the course will work on security, including privacy, for a spectrum of networked systems, covering: (i) Internet and TCP/IP networks, (ii) Cellular data and voice networks, (iii) Wireless local and personal area networks, (iv) Internet of Things and embedded systems, (v) Wireless Sensor Networks, and (vi) Mobile ad hoc and hybrid networks, such as vehicular communication systems. The focus is expected to vary across years.

The course exposes students to security and system implementation issues and it prepares them for further work in the industry, towards an MSc thesis, and possibly later Licentiate/PhD work, on topics related to network and system security.

Kursupplägg

The course is structured around project work undertaken by the students, with the extensive help of the teaching staff. Weekly interactive meetings, including a number lectures at the beginning of the course, and extensive consultation will be made available to students. All material and instruction shall be in English.

Kurslitteratur

Updated yearly reading list from the research and technical literature. Reference to the reading material (textbooks) of the NSS course.

Examination

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

Project outcomes will be graded, with all project parts mandatory for successfully completing the course, resulting in a single final grade.

Övriga krav för slutbetyg

Requirements for final grades: For MSc students, they are in the letter scale, A-F. Pass/Fail for PhD students.

Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.