COURSE SYLLABUS

Cybersäkerhet kring sakernas internet och kritiska infrastrukturer A1N
Cyber Security for Internet of Things and Critical Infrastructures A1N
7.5 credits

Course Code: IT747A
The Course Syllabus is valid from: 1 January 2021
Date of Approval: 27 August 2020
Version Number: 2.1
Subject: Informatics
Main Field of Study: Informatics
Disciplinary Domain: Technology
Academic Level: Advanced level

1 Name, Scope and Level of the Course
The course is provided by the University of Skövde and is named Cyber Security for Internet of Things and Critical Infrastructures A1N. It comprises 7.5 credits and is on advanced level. The level of progression of the course is A1N.

2 Objectives
After completed course the student should be able to:

- explain the Internet of Things (IoT) and critically reflect on related security issues
- explain and critically reflect on IoT platforms and illustrate their security and privacy aspects
- in an in-depth way discuss vulnerabilities affecting critical infrastructures
- analyze threats and attack models, and devise countermeasures for IoT devices
- critically evaluate potential threats to cyber-physical systems prevalent in critical and Industry 4.0 infrastructures

3 Course Content
Internet of Things (IoT) is poised to change technological infrastructures, including critical infrastructures. The aim of this course is to introduce a wide variety of security and privacy issues associated with the Internet of Things. The course also discusses and problematizes the interweaving interplay between IoT and cyber-physical systems which are increasingly contributing to the foundation of evolving Smart-X applications and to the core of Industry 4.0 revolution, as well as contemporary critical infrastructures. Vulnerabilities across these highly-networked structures are presented along metrics used to quantify their severity. Models of threats exploiting those vulnerabilities and resulting attack impact patterns are elaborated to understand the concepts involved in cybersecurity risk-assessment.

4 Forms of Teaching
The teaching comprises lectures and seminars/group discussions, as well as hands-on practices on tools and application programming interface (API) used to root-out cyber-security vulnerabilities and model related threats, or simulate consequent-attack impacts.

The teaching is conducted in English.

5 Examination
The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

Registration of examination results:

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory assignments</td>
<td>3 credits</td>
<td>A/B/C/D/E/F</td>
</tr>
<tr>
<td>Report</td>
<td>2 credits</td>
<td>G/U</td>
</tr>
<tr>
<td>Seminar assignments</td>
<td>2.5 credits</td>
<td>G/U</td>
</tr>
</tbody>
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1 Determines the final grade of the course.

Students with a permanent disability who have been approved for special educational support may be offered adapted or alternative examinations.
6 Admission Requirements
A Bachelor’s degree (equivalent to a Swedish kandidat examen) within the fields of informatics or computer science or equivalent. A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 / English course B. This is normally demonstrated by means of an internationally recognized test, e.g., IELTS, TOEFL or equivalent.

7 Subject, Main Field of Study and Disciplinary Domain
The course forms a part of the academic subject area of Informatics. The course is a part of the main field of study in Informatics at the University of Skövde. The disciplinary domain of the course is Technology.

Every course at the University of Skövde belongs to a subject. The division of subjects is used for follow-up and quality assurance. A main field of study is an area in which a degree can be awarded. Disciplinary domain is a division which is used by the government for the allocation of resources for studies at basic level and advanced level.

8 Approval of Course and Course Syllabus
The course was approved by the Curriculum Committee for Informatics on 29 August 2019. This course syllabus was approved by the Curriculum Committee for Informatics on 27 August 2020. It is valid from 1 January 2021 and replaces the course syllabus approved 29 August 2019.

9 Overlapping with Another Course
This course cannot constitute a part of a degree also containing a course the content of which is totally or partly equivalent to the content of this course.

10 Additional Information
Further information will be available on the university’s website before a course is given.

National and local regulations for higher education are available on the university’s website.

Upon completion of the course there will be a follow-up. The main purpose of this follow-up is to contribute to improvements of the course. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of course evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.

11 Course Literature and Other Educational Materials
Articles and other materials will be provided by the course coordinator.