DIT101 Language-Based Security, 7,5 högskolepoäng

Language-Based Security, 7.5 credits

Avancerad nivå / Second Cycle

Fastställande

Kursplanen är fastställd av IT-fakultetsnämnden 2009-09-18 och senast reviderad 2017-06-07 av Institutionen för data- och informationsteknik. Den reviderade kursplanen gäller från och med 2017-08-20, höstterminen 2017.

Utbildningsområde: Naturvetenskapligt 100 %
Ansvarig institution: Data- och informationsteknik

Inplacering

The course is a part of the Computer Science Master's programme and an elective course at the University of Gothenburg.

Kursen kan ingå i följande program: 1) Datavetenskapligt program (N1COS), 2) Computer Science, Master's Programme (N2COS), 3) Datavetenskapligt program (NDATM), 4) Software Engineering Master's Programme (N2SOM) och 5) Applied Data Science masterprogram (N2ADS)

Huvudområde	*Fördjupning*
Software Engineering	A1F, Avancerad nivå, har kurs/er på avancerad nivå som förkunskapskrav
Datavetenskap	A1F, Avancerad nivå, har kurs/er på avancerad nivå som förkunskapskrav

Förkunskapskrav

The requirement for the course is to have successfully completed two year studies within the subject Computer Science or equivalent.

English B level or English proficiency equivalent to IELTS 6.5 no part under 5.5 or TOEFL 575 p, TWE score 4.5 is also required.

Lärandemål

5.1. Knowledge and understanding.

- apply practical knowledge of security for modern programming languages
- demonstrate critical knowledge of principles behind application-level attacks (such as Trojan horses, worms, buffer overrun attacks, web application attacks, covert channels, and malicious code)
- define language-based protection mechanisms (such as static security analysis, program transformation, and stack inspection)

5.2. Skills and abilities.

- demonstrate the ability to identify application- and language-level security threats,
- specify and argue for application- and language-level security policies,
- design and claim the security, clarity, usability, and efficiency of solutions
- implement such solutions in expressive programming languages

5.3. Judgement and approach.

- develop judgement that will allow them to apply their knowledge in new environments.

Innehåll

This course combines practical and cutting-edge research material. For the latter part, the course's particular emphasis is on the use of formal, or semantic, models of program behaviour for specifying and enforcing security properties. The course consists of lectures, group meetings and project presentations.

Former för undervisning

Undervisningsspråk: engelska

Former för bedömning

The course is examined by 3 laborations (U-G), carried out individual or in group, and a individual written report (U/G/VG) which is also presented orally.

A student who failed a same examination twice has the right to request of the department a change of examiner. The request is to be in writing and submitted as soon

as possible. The department is to grant such a request without undue delay.

In cases where a course has been discontinued or major changes have been made a student should be guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given.

Betyg

På kursen ges något av betygen Väl godkänd (VG), Godkänd (G) och Underkänd (U). To pass the course, students must Pass the labs and the project. In order to pass the project part, students need to make a presentation of the project in class and pass the requirements on a written report that documents the project. In order to Pass with Distinction, student must pass the labs and get the grade Pass with Distinction on the project part. In order to Pass with Distinction on the project part, the project must be significantly more substantial than average.

Regarding the application of ECTS scales, please see Vice-Chancellors decision 2007-05-28,
dnr G 81976/07.

Kursvärdering

The course is evaluated through meetings both during and after the course between teachers and student representatives. Further, an anonymous questionnaire can be used to ensure written information. The outcome of the evaluations serves to improve the course by indicating which parts could be added, improved, changed or removed.

Övrigt

Knowledge of the material covered in the courses DIT230 Programming Languages technology and DIT641 Computer Security is recommended although not required as a prerequisite.

The syllabus correspond to the syllabus of the Language-Based Security course at Chalmers.