COURSE SYLLABUS

Kvalitetssäkring av säkerhetskritiska applikationer
Quality Assurance of Security Aware Applications
6 credits (6 higher education credits)

Course code: PA2586
Main field of study: Computer Science, Software Engineering
Diciplinary domain: Technology
Education level: Advanced level
Specialization: A1N - Second cycle, has only first-cycle sourse/s as entry requirements

Language of instruction: The language of instruction is English.
Applies from: 2022-01-17
Approved: 2021-09-01

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1. Decision

This course is established by Dean 2021-04-29. The course syllabus is approved by Head of Department of Software Engineering 2021-09-01 and applies from 2022-01-17.

2. Entry requirements

Admission to the course requires at least 120 credits, of which at least 90 credits are in a technical area, and a minimum of 2 years professional experience within an area related to software-intensive product and/or service development (shown by, for example, a work certificate from an employer).

3. Objective and content

3.1 Objective

The purpose of this course is to show how fundamental testing practices are applied in the context of secure software development. The student will learn to integrate automated software testing with different approaches to verify software security, leveraging theories from continuous quality assurance in software development, as well as security best practices.

The course is adapted to give a solid introduction to non-testing experts with an interest in software security, and addresses both how professionals (developers, managers, decision-makers) can incorporate security into the quality assurance process of their products/service.

3.2 Content

With the rise of cyber attacks, software developers must create systems which are resilient. Thus, security is an integral part of software development and an essential in software design.

In this course, consisting of four modules, we will explore the fundamental approaches towards continuous software security assurance. In addition, we will discuss how to design secure software and how to perform risk-based software development. The student will gain insights into the underlying theory of software security from a quality assurance perspective, but also experience— through practical assignments that aim to test your application of the theory—its concepts and tools.

The course covers the following parts:
• Software Security Theory
• Software Testing Fundamentals
• Proactive approaches to software security
• Reactive approaches to software security

4. Learning outcomes

The following learning outcomes are examined in the course:

4.1 Knowledge and understanding

On completion of the course, the student will be able to:
• Discuss assurance issues in the development of security-aware applications.
• Explain how to apply different verification and validation methods to achieve security in software engineering, e.g., risk-based software development, secure software development lifecycle (SSDLC).

4.2 Competence and skills

On completion of the course, the student will be able to:

• Apply frameworks, tools and processes that are presented in the course with the purpose of verifying or validating the security of a software.

4.3 Judgement and approach

On completion of the course, the student will be able to:

• Evaluate the appropriate applications of the frameworks, tools and processes that are presented in the course including the trade-off their application entails.

5. Learning activities

The teaching is organised around online lectures, pre-recorded videos, together with written material, literature, and research literature. Throughout the course, communication, feedback, and discussions with teachers and fellow participants will take place through email and the course's online learning platform.

6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
2205	Written assignment	1 credits	GU
2215	Project assignment	3 credits	GU
2225	Presentation	2 credits	GU

The course will be graded G Pass, UX Insufficient, supplementation required, U Fail.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

The course information for each course revision should include the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

7. Course evaluation

The course evaluation should be carried out in line with BTH:s course evaluation template and process.

8. Restrictions regarding degree

The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course.

9. Course literature and other materials of instruction

Materials such as research articles and other course materials, as well as recommendations for additional reading, are provided via the courses' online platform.