COURSE SYLLABUS
Software Product Quality Assurance, 6 credits

Kvalitetssäkring av mjukvaruprodukter, 6 högskolepoäng

Course Code:	TKSS26		Education Cycle:	Second-cycle level
Confirmed by:	Dean Feb 9, 2015		Disciplinary domain:	Technology (95%) and social sciences (5%)
Valid From:	Jan 1, 2016		Subject group:	DT1
Version:	1		Specialised in:	A1F
Reg number:	JTH 2015/2134-313		Main field of study:	Product Development

Intended Learning Outcomes (ILO)

After completing the course, the student shall

Knowledge and understanding

- demonstrate comprehension of the fundamental concepts, standards and guidelines of software product quality assurance
- display knowledge of software quality and quality models, quality metrics and quality control
- demonstrate comprehension of methods and techniques for software verification and validation including testing and inspections
- be familiar with examples of research into software quality and verification automation

Skills and abilities

- demonstrate ability to define, design and implement quality assurance activities
- demonstrate sufficient skills to apply techniques for software testing including different types and different levels of testing
- demonstrate ability to use modern tools for back-end and front-end testing as well as testing infrastructure including continuous integration

Judgement and approach

- demonstrate ability to analyze and assess opportunities for achievement of software product quality and improvement of quality assurance process
- demonstrate ability to evaluate methods and techniques for verification and validation, and choose appropriate ones for the given software development project

Contents

The course introduces the different influences on software quality. Four key messages are emphasised: that successful software can persist for years after initial delivery but only if it is of sufficient quality; that software quality assurance is not just about testing; that testing is not a phase conducted towards the end of development; and that quality assurance addresses both product and process.

The course includes the following topics:

- Achieving software quality assurance via verification and validation
- Testing in an Agile context, test-driven development and continuous integration
- Controlling software quality including the management of defects, versions and releases
- Designing a testing infrastructure including code analysers and test tools
- Test automation including test case generation and evolutionary testing
- Testing levels: unit, integration, component interface, and system testing
- Testing particular types of software: back-end software and front-end software
- Different software development roles, their motivations, their involvement in testing and the need for independence
- Software process improvement including the Capability Maturity Model Initiative
- Describing software quality, the use of quality models and metrics in software quality assurance

Type of instruction

The course will consist of lectures, seminars, exercises and practical work.

The teaching is conducted in English.

Prerequisites

Passed courses 180 credits in first cycle, at least 90 credits within the major subject Computer Engineering, Electrical Engineering (with relevant courses in Computer Engineering), and 15 credits Mathematics. In addition, completed course Software Engineering – a Product Perspective, 9 credits (or the equivalent). Proof of English proficiency is required. (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Examination	2 credits	5/4/3/U
Assignment	2 credits	5/4/3/U
Laboratory work	2 credits	U/G

Other information

Exemption from entry requirement allowed according to the selection groups of the program, where the course is included.

Course literature

The literature list for the course will be provided one month before the course starts.
Title: Software Quality Assurance: From Theory to Implementation
Author: Daniel Galin
Publisher: Addison-Wesley,
ISBN: 13: 9780201709452, ISBN 10: 0-201-70945-7