COURSE SYLLABUS

Kvalitetsstyrning
Software Quality Management
7.5 credits (7,5 högskolepoäng)

Course code: PA2557
Main field of study: Software Engineering
Disciplinary domain: Technology
Education level: Second cycle
Specialization: A1N - Second cycle, has only first cycle course/s as entry requirements

Language of instruction: English
Applies from: 2023-08-28
Approved: 2022-12-05

1. Decision
This course is established by Dean 2016-08-30. The course syllabus is approved by Head of Department of Software Engineering 2022-12-05 and applies from 2023-08-28.

2. Entry requirements
Completed courses of at least 120 ECTS credits of which 90 credits must be in the following areas: Software Engineering or Computer Science. In addition, a completed course of at least 7.5 credits in Software Engineering or a Team Software Engineering Project is required.

3. Objective and content

3.1 Objective
The course aims at a detailed understanding of software quality and the challenges involved in achieving high software quality. Furthermore, the course discusses quality management of software and its role in software development, as well as the activities, technologies and models that are important for software quality assurance.
During the course, participants will develop an awareness of the current state-of-the-art in software quality assurance as well as the state-of-practice within the software industry.

3.2 Content
The course covers the following general themes:
• Quality philosophy: foundations of software quality, advantages and shortcomings.
• Quality issues: quality, historical background, definitions, motivations, areas of application, market perspectives.
• Software process improvement: software development processes and processes for process improvement.
• Management systems for quality and models: quality management systems; their aims, similarities and weaknesses, advantages and drawbacks.
• Continuous improvement methods: Examples of methods.
• Defect prevention: proactive and reactive methods; their advantages, drawbacks and use in different phases of the software life cycle.
• Quality attributes: quality attributes and perspectives (e.g., developer, manager) to apply to different attributes.
• Software processes: software processes and their connection to different quality activities, techniques and models.
• Software techniques: culture and ethics.
• ISO9001:2015, TickITplus and the Capability Maturity Model: overview of quality standards related to the software sector.

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:
• account for the concept and application of quality in software development
• provide a basic account of quality and discuss software quality and its impacts on software development in different scenarios
• provide a basic account of state-of-the-art software quality management and its relation to state-of-the-practice
• provide a detailed account of methods, models and techniques within software quality administration and discuss their

strengths, weaknesses, and areas of application
• provide a detailed account of perspectives on quality and discuss trade-offs between (often contradictory) quality goals and issues

Skills and abilities
• discuss trade-offs between (often contradictory) quality goals and issues
• relate their own experience to theories in the literature

Valuation capability and approach
• present, argue for and discuss issues of software quality and defend personal views

5. Learning activities

Besides lectures, the course is based on the participants' own experiences and literature studies, as well as exercises and meetings throughout the course. In summary, the focus of this course is to engage students in their learning, through discussions in which the lecturer is more of a facilitator than a traditional teacher. It is expected that all recommended literature is read and used in group discussions.

6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
1810	Written assignment 1	1.5 credits	AF
1820	Written assignment 2	1.5 credits	AF
1830	Written assignment 3	1.5 credits	AF
1840	Written examination	3 credits	AF

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Fail, supplementation required, F Fail.

The final grade is based on a weighted average. Rounding occurs downwards.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

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.

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

Aligning Organizations through Measurement, The GQM+ Strategies Approach
Author: Author: Basili, Trendowicz, Kowalczyk, Heidrich, Seaman
Published: 2014
Number of pages: 205
Publisher: Springer International Publishing AG
ISBN: 9783319050461

Reference literature

Course material from the department.
A Guide to the Project Management Body of Knowledge. (PMBOK GUIDE) and The Standard for Project Management
7th edition
Publisher: Project Management Institute, Inc
Published: 2021, Number of Pages: 250
ISBN: 9781628256642

Accelerating Process Improvement Using Agile Techniques
Author: Jacobs, Deb
Publisher: Auerbach Publications
Published: 2005, Number of pages: 390
ISBN: 0-8493-3796-8

Software Process Improvement – Practical guidelines for Business success
Author: Zahran, Sami
Publisher: Addison-Wesley
Published: 1998, Number of pages: 447
ISBN: 0-201-17782-X

Quality from Customer Needs to Customer Satisfaction
Authors: Bergman, Bäckström, Garvare, Klefsjö
4th edition
Publisher: Studentlitteratur
Published: 2022, Number of pages: 720
ISBN: ISBN 9789144140261

Design Error, A human factors approach
Author: Ronald William Day
Publisher: CRC Press
Published: 2017
ISBN: 9781138463844

Automated Defect Prevention
Authors: Huizinga, D; Kolawa, A.
Publisher: Wiley-Interscience
Published: 2007, Number of pages: 454
ISBN: 978-0-470-04212-0