MÄLARDALEN UNIVERSITY SWEDEN · BTH BLEKINGE INSTITUTE OF TECHNOLOGY · CHALMERS · UNIVERSITY OF GOTHENBURG

Customised courses in software development

Functional Safety, Software Verification and Validation 1.5 credits

- Pilot course
- October – December 2014

This course will introduce typical methods used to verify software conformance to requirements or validate software's contribution to system safety. Testing, review, and formal analysis of software for safety-critical systems is often performed differently than similarly-titled activities in non-critical software. We will focus on introducing students to a broad spectrum of useful techniques and ensuring that they understand:

(a) What each techniques is intended to accomplish
(b) How well it is known to accomplish that goal
(c) The times and circumstances under which it is used
(d) How the technique is performed

Course contents

- Introduction to verification and validation
- Reviews and inspection
- Language subsets
- Static analysis
- Memory usage analysis
- Execution time analysis
- Functional and safety testing

The contents covers both state of practice methods and state of art results within the respective area

Course structure

After an initial gathering at Mälardalen University the students will have access to a series of pre-recorded video lectures that can be viewed at any time. Each video lecture contains self assessment questions and possibilities for the students to submit questions and comments. A discussion forum will also be available for communication between students and the lecturer. The structure is developed to facilitate flexible learning.

Each student will have to complete an individual written assignment that cover the course contents. The assignment will be given at the end of the course and graded as passed or failed. Upon successful completion of the course and passed assignment the student will receive 1,5 credits

Who should attend this course?

The target audience for this course is professional software developers. Students need not be employed in or have experience from the safety-critical sector. Students should have a basic background in software development (e.g., as might result from working as a developer for 3 years).

We expect basic, conceptual familiarity with: computer architectures and operating systems; compilers and high-level languages; and the scope of a development process.

Contact us for more information about this course

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www.promptedu.se

Course development team

The course is developed in collaboration between Mälardalen University, and representatives from Volvo CE, Arcticus, Effective Change, Etteplan, Saab, SafetyIntegrity, and Scania. The course development team has experiences from teaching numerous university level courses, e.g., Safety critical systems engineering, Software engineering, and Computer architecture.

Dr. Kaj Hänninen is a postdoctoral Research Fellow. He has experience of working as a safety manager, global V&V team lead and safety-critical systems expert in various domains.

Prof. Kristina Lundqvist focus on bridging the theoretical foundations of dependability and industrial software development practices, with an emphasis on the technology and process aspects of complex dependable systems.

Register for the course

Read more about the course on www.promptedu.se
Register by the latest October 15 at www.antagning.se

PROMPT

Software is a business-critical resource for large parts of Swedish private enterprise and an important source of innovation and competitiveness. In cooperation with academia and industry we are establishing a national education alternative with the aim of guaranteeing the supply of software-related advanced skills and innovative power for Swedish private enterprise. The courses are given in cooperation with the Blekinge Institute of Technology, Chalmers, the University of Gothenburg, Mälardalen University and SICS.

The courses, all on master´s level, have been developed to suit those gainfully employed and who need to be able to combine work and studies. The courses have been produced in cooperation with the companies who need your skills, and teaching has been adapted for those who are gainfully employed. The courses combine conventional studies with distance, web-based learning and teaching at the participating companies. The courses are given within the framework of the PROMPT project (Professional Master's Education in Software Development). PROMPT is a cooperation project between academia and industry with the aim of strengthening competitiveness in Swedish companies.

PROMPT's curriculum is organised into four subject-related areas, and also a special area with project courses.

- Process and Methods for Developing Software-intensive Systems
- Software Architecture and Design • Verification and Validation
- Reliable Software • Project Courses

The PROMPT project is financed by the Knowledge Foundation's programme *"Expertkompetens för innovation"* (Expert Skills for Innovation). Its aim is that cooperation between academia and industry will establish a national educational alternative with the aim of guaranteeing the supply of software-related advanced skills and innovative power for Swedish private enterprise.

Knowledge Foundation