Masters of Software Engineering

The Masters of Software Engineering is an English-taught program delivered jointly by the two largest Universities in Estonia: University of Tartu (UT) and Tallinn University of Technology (TUT). Upon successful completion of the program, students will receive a joint degree signed by both universities.

The program is meant for future software engineering professionals who wish to acquire a broad range of software engineering skills, ranging from how to write reliable and maintainable software, up to how to manage software engineering teams, how to set up quality management processes and how to make compelling business cases for software projects.

In addition to providing advanced software engineering and management skills, the program allows students to specialize in one of two major application domains: enterprise systems and embedded real-time systems.

The Master’s of Software Engineering starts with a core module where you will acquire general software engineering skills. Students then choose one of two specialization modules: enterprise software (delivered by University of Tartu) or embedded & real-time software (delivered by Tallinn University of Technology). A range of elective and free-choice courses allows students to further specialize or to broaden their horizons, depending on their interests and career path.

During the second year, students put the acquired skills into use, first via an internship or an entrepreneurship project, and secondly via a research or engineering project leading to the defense of a Master’s thesis. Professional practice and research represent almost half of the curriculum’s volume.

All courses in the curriculum emphasize teamwork. Throughout their studies, students will complete mini-projects and assignments in teams. During preparation of the Master’s thesis, students will immerse themselves in one of the research groups at University of Tartu or Tallinn University of Technology and work together with renowned international researchers in the field of software engineering.

With over a quarter of students coming from all corners of the world, and a third of international staff members, the Master’s of software engineering provides a cosmopolitan environment, allowing students to develop international connections that often prove valuable in future stages of their career.
Advanced Programming (taught at TUT)

The objective of this course is to expose students to advanced programming methods and practices that allow software developers to produce well-structured, maintainable and testable code. The course puts an emphasis on functional programming concepts and shows how these concepts help programmers to solve challenging programming problems in an elegant way. The course has a practical component where students apply functional programming techniques to real-world business and scientific computing tasks.

A student who has successfully completed this course:
- Has a clear understanding of functional programming concepts that are applicable in any programming language.
- Can write elegant and well-structured code.
- Can test functional programs.
- Is familiar with the application domains where functional programming is a natural fit and can decide when to use functional programming.
- Can write programs using an asynchronous or reactive approach.
- Can write data-parallel programs.

Software Quality and Standards (taught at TUT)

The objective of this course is to provide an overview of the problems and methods of software verification and validation and quality management. The course introduces different testing methods and principles of testing management, and gives an overview of planning, performing, and documentation of testing.

On successful completion of this course, students will be able to:
1. Know the problems and methods of software verification and validation.
2. Know the major testing methods and principles of testing management.
3. Understand the principles, methods, and frameworks of quality management, standardization, and auditing.
4. Know how to design, perform, and document tests.

The course has been divided into two parts. The first part (approximately 60% of the volume) addresses the methods and management of software verification and validation: testing (the principles of software testing, white box, functional, other methods), static methods (inspections, reviews and walkthroughs, program correctness proving), and the frameworks for testing management. The second part (approximately 40% of the volume) provides an overview of the software quality management concepts and standards: the principles of quality management and standardization, software process quality, and software quality criteria and metrics. The prerequisite for this course is familiarity with basic concepts of software engineering and ability to program in at least one programming language.
ESTONIA
Population: 1.3 million
Capital: Tallinn
Official language: Estonian
Area: 45,227 km²
- Member of European Union and NATO
- Just a short flight from London, Paris, Moscow
- Country of 1500 islands and 1000 lakes

UNIVERSITY OF TARTU
Founded: 1632
9 faculties, 4 colleges
Students: 17,000
International students: 800
- 9 international Master’s degree programs
- About 100 doctoral degrees awarded annually
- In world’s top 1% citations in Environment/Ecology, Clinical Medicine, Plant and Animal Science

WHY ESTONIA,
WHY TARTU:
- Technology-driven innovation.
- A pioneer in electronic identity and electronic voting.
- Safe, fast and flexible exchange of private and state information.
- Vigorously adopted mobile technology, online banking and electronic government services.
- Home to internationally successful IT innovations.
- A groundswell of IT ventures and start-ups with enviable potential.
- Tartu is a student town – 20% of the population are students.
- Modern residence halls, affordable accommodation.
- Free wireless internet almost everywhere: universities, parks, cafés, libraries and sometimes even in forests.
- Home to UT, ranked in the top 3% in the world (THES 2011-12 World University Rankings).
- International students rate Estonia as the #1 place to stay (Erasmus Student Network Survey).

post us your question: www.ut.ee/ask