

MSc in Software Engineering

WHAT IS SOFTWARE ENGINEERING?

Software systems are among the most complex systems developed by humans. At the same time, security and reliability are critical issues in software systems, in particular as software takes on critical roles in daily life, finances, health and transportation. The role of Software Engineers is to design, organize and manage the development and deployment of large software systems where security and reliability are key requirements. Thus Software Engineers have a good foundation in mathematics, practical knowledge of engineering methodology and in-depth understanding of computing and programming.



STRUCTURE OF MSC IN SOFTWARE ENGINEERING

The Master's program in Software Engineering is 120 ECTS units and is usually completed in two years. Students can choose between traditional course-based studies and research-based studies. In course-based studies, three semesters are spent taking courses, while the final semester is reserved for a Master's project or thesis. In the research-based program, students spend two semesters taking courses and one year working on a research project. Both of these approaches give students significant advantage in industry and prepare them well for further studies. The primary distinction is that the research-based program focuses on students developing and demonstrating their capability for independent research and development.

In the Software Engineering program, key emphasis is on real problems, state-of-the art methodologies and close connections to industry. This goes for courses, projects and research, thus giving students a good insight into the real world of software development as well as good connections.

Each MSc student has an advisor who works with the student to organize his or her study plan and to ensure the student gets as much as possible from the program. All Software Engineering students must complete four courses: "Automata and Computability", "Research Methodology", "Advanced Software Engineering" and "Modeling and Verification". The student thus has a great deal of freedom to define his or her own path and focus areas, in collaboration with his or her advisor.

MSC LEVEL COURSES

Many graduate level courses are available in the School of Computer Science and the School of Engineering. Among those are: Advanced Database Systems, Semantics of Programming Languages, Language Technology, Agent-Based Modeling and Simulation, Modeling and Verification, Informed Search Methods in AI, Virtual Environments, Reinforcement Learning, Implementation of Database Systems, Optimization Methods, Data Mining and Statistics, and Optimization Applications.

REQUIREMENTS AND FINANCIAL AID

Students applying for MSc in Software Engineering must have completed a BSc degree in Software Engineering, Computer Science or other Engineering disciplines. Those students who do not have the required background in Engineering and Computer Science may be required to take additional courses, but that does not affect entry requirements. Students without an undergraduate degree in Engineering must satisfy mandatory requirements for Mathematics, Physics and other core subjects before applying to become certified engineers.

Various options are open for financial aid, including both teaching assistantship and research assistantship. In addition, strong Software Engineering students can get internships with affiliated companies and research institutes, including the Fraunhofer Center for Experimental Software Engineering in Maryland, USA.



SCHOOL OF COMPUTER SCIENCE REYKJAVIK UNIVERSITY

The School of Computer Science at Reykjavik University has over twenty full-time faculty members who are active members in the international research community. Their expertise covers a wide range of computer science and software engineering, from practical cutting-edge multimedia handling to theoretical foundations for verifying concurrent systems.

CADIA – Center for Advanced Design of Intelligent Agents: Focus on Artificial Intelligence, in particular intelligent decision-making, human-like behavior, game playing, virtual environments and robotics. Applications include multiplayer games, space operations and more.

ICE-TCS – Icelandic Center of Excellence in Theoretical Computer Science: Focus on theoretical foundations of computations and algorithms, in particular process algebras, semantics, model-based approaches, graph algorithms, networks, and more.

LDSS – Laboratory for Dependable and Secure Systems: Focus on dependability and security of computer systems, in particular distributed and network accessed systems. Applications include security of online financial software and web application security.

Database Laboratory – Focus on handling and using very large data collections, such as video and sound, using state-of-art database organization and search techniques. Applications include multimedia search techniques and video piracy detection.

Language Technology Laboratory – Focus on natural language processing, in particular on methods to handle the Icelandic language. Applications include spellchecking and spoken-language interfaces.

ICE-ROSE – Icelandic Center for Research On Software Engineering: Focus on formal, component-based and user-oriented methods for software design and development, as well as on object-oriented methods and composition-based verification.

RESEARCH LABORATORIES

FURTHER INFORMATION

Further information can be found on the web both in Icelandic, <http://hr.is/td> and in English, <http://ru.is/cs>

Kristine Helen Falgren, administrative director
Email: kristine@ru.is
Telephone: 599-6373