Learning Outcomes for MSc in Computer Science

National Qualification Framework for Iceland	MSc in Computer Science at Reykjavik University
Qualification at Master level Cycle 2.4 **90 – 120 ECTS**	The MSc is a two-year graduate programme, 120 ECTS credits, in Computer Science. Students may choose the research-based course, in which 60 ECTS credits are devoted to courses and 60 ECTS credits to an individual research project, or the course-based route, in which 90 ECTS credits are devoted to courses and 30 ECTS credits to an MSc project, which can be a group project. The study programme relates closely to the research carried out at RU's School of Computer Science, through research-based courses and advanced research projects. The goal of the programme is to prepare students for prominent careers in industry and/or for futher academic study.
K N O W L E D G E	
The National Qualification Framework states that degree holders possess knowledge within a defined field of the relevant profession. 1. Possess knowledge and understanding of scientific subjects and challenges 2. Can provide arguments for their own solutions 3. Can place latest knowledge into context in the relevant field 4. Are familiar with research methods in their scientific field 5. Have knowledge of science ethics	* The learning outcomes for MSc in Computer Science state that degree holders possess knowledge of:
	Basic theoretical principles in Computer Science. This includes knowledge of the following topics: • various types of finite automata, • the formal definitions of programming languages and their connection with automata, • Turing machines and computability theory, and • algorithmic complexity classes.
	Research methodology, including basic history of science, the fundamentals of scientific writing, how to give a scientific talk, how to evaluate a scientific paper, and research ethics.
	Statistical principles, and software tools embodying those.
	Advanced principles and techniques from the elective areas in which the student decided to develop special expertise. Such expertise is developed by following

		elective courses in the research areas of the members of staff, by means of advanced independent studies, and mainly during the MSc thesis work. Areas of specialization include artificial intelligence (e.g., agent technology, computer games, robotics and virtual environments), concurrency theory (with emphasis on modelling and verification of reactive systems, process algebra, and structural operational semantics), databases (with focus on efficient indexing of multimedia databases), and language technology (e.g., tagging of Icelandic and software support for the analysis of Icelandic text).
		Established and potential applications of techniques developed within the chosen area of specialization.

SKILLS		
The National Qualification Framework states that degree holders can apply methods and procedures of a defined scientific field or profession. *This entails that holders:* 1. Have adopted relevant methods and procedures 2. Are capable of analyzing statistical information 3. Can understand and tackle complex subjects in a professional context 4. Can apply their knowledge and under-standing with a professional approach 5. Can use the relevant equipment, technology and software 6. Can collect, analyze and evaluate scientific data 7. Are innovative in developing and applying ideas 8. Can apply their knowledge, understanding and proficiency for resolution in new and unfamiliar situations or in an interdisciplinary context 9. Are capable of integrating knowledge, resolve complex issues and present an opinion based on the available information 10. Can recognize novelties which are based on scientific theories and/or experiments 11. Can apply the methods of the relevant scientific field	*	The learning outcomes for the MSc in Computer Science state that degree holders can apply the methods and procedures of computer science, as follows:
	1, 3, 4, 8, 10	Methods and tools to design, implement, test, document, and maintain a computer-based system
	2, 3, 4, 8, 10, 12	Apply research methods, techniques, and problem solving approaches from the field of research in which they are specializing
	2, 3, 4, 8, 10. 12	Access, retrieve and evaluate relevant professional information reliably
	2, 3, 4, 8, 10. 12	Methods and tools for analyzing complex real-world problems and devise computer-based solutions
	2, 3, 4, 8, 10. 12	Be receptive to new ideas and innovation

and/or profession to present, develop and solve projects 12. Understand research and research findings.		
		Communicate effectively and professionally both in writing and by means of presentations to both specialist and a general audience
		Analyse complex real-world problems and devise efficient computer-based solutions
COMPETENCES		
The National Qualification Framework states that degree holders can apply their knowledge and skills in a practical way in their profession and/or further studies. *This entails that holders:* **1.** Have developed the necessary learning skills and independence for further studies **2.** Can initiate and lead projects within the scientific field and be responsible for the work of individuals and groups **3.** Can communicate scientific information, challenges and findings to scholars as well as to general audience **4.** Are capable of presenting and describing scientific issues and research findings in a foreign language **5.** Can make decisions in an independent, professional manner and support them **6.** Can decide which analytical methods and complex theories are applicable **7.** Can communicate statistical information.	*	The learning outcomes for the MSc in Computer Science state that degree holders can apply their knowledge and skills in as follows:
		Work in a collaborative manner with others on a team, contributing to the management, planning and implementation of a computer system
		Independently propose a small scale research project, plan its execution, undertake its development, evaluate its outcome and report on its results in a professional manner
		Advance knowledge through innovation and knowledge creation
		Pursue life-long learning in practice
		Interpret and present theoretical issues and empirical findings