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Study programme "Computer Systems"

Main attributes

Title	Computer Systems
Identification code	DMD0
Education classification code	45481
Level and type	Academic Master Study
Higher education study field	Information Technology, Computer Engineering, Electronics, Telecommunications, Computer Control and Computer Science
Head of the study field	Agris Nikitenko
Deputy head of the study field	Jurģis Poriņš
Department responsible	Faculty of Computer Science and Information Technology
Head of the study programme	Egons Lavendelis
Professional classification code	
The type of study programme	Full time
Language	Latvian, English
Accreditation	31.05.2013 - 31.12.2023; Accreditation certificate No 2020/80
Volume (credit points)	80.0
Duration of studies (years)	Full time studies - 2,0
Degree or/and qualification to be obtained	Master Degree of Engineering Science in Computer Systems
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Bachelor Degree of Engineering Science in Computer Control and Computer Science

Description

Abstract	Academic Master study programme "Computer Systems" (80 credit points) is 2 years long and provides students with advanced knowledge in computer science with focus on modelling and development of computer systems, software engineering and systems theory and analysis. Labs, practical and individual works allow acquiring practical skills for development of the whole spectrum of computer systems, in particular information, database, intelligent and software systems. The important part of the study programme is scientific seminars where students supervised by professors acquire research and result presentation skills. There are 3 concentration areas: 1) computer systems design, 2) applied computer systems software, 3) applied computer science. The volume of the Master Paper is 20 credit points which are divided as follows: 4 credit points during the first study year and 16 credit points during the second study year. Such division allows to start working out a Master Paper and to ensure the quality of the paper.
Aim	The aim of the study programme is to prepare specialists with deep knowledge in computer science, software engineering, computer systems development theory, database technologies, programming languages, software development environments and artificial intelligence, as well as with ability to participate in software development project, fulfilling different (including manager) roles and complying with IT industry standards and professional ethics. To prepare students so that after graduation they could start working in the university, scientific research organizations, fulfil professional duties at IT companies, as well as continue studies at Doctoral study programme.
Tasks	Study programme tasks are the following: <ul style="list-style-type: none"> - To provide deep knowledge in computer science, focusing on software engineering, computer system development and system analysis, as well as in artificial intelligence methods and modern database technologies. - To provide knowledge about the recent findings in computer science that provides the basis for creative thinking. - To develop students' scientific analysis capabilities, pedagogical skills, and ability to solve problems independently, to continue studies in the doctoral study programme and to promote their involvement in scientific problem solving. - To strengthen students' abilities of independently improving their professional knowledge and skills. - To develop students' skills to professionally work with complex computer systems' development environments and tools, as well as critically evaluate them and choose the most appropriate for solving different tasks. - To provide knowledge and skills that are necessary for project and team management. - To improve students' oral and written communication skills as well as to improve students' skills in team work. - To improve scientific research skills by developing Master Thesis.

Learning outcomes	<p>Graduates of this study programme will be:</p> <ul style="list-style-type: none"> - able to independently define and critically analyze scientific and professional problems; - able to carry out scientific research, define and justify its results; - able to professionally adapt, to acquire new research methods and technologies; - able to professionally draw up, submit and present scientific research results; - able to participate in research projects and assist in pedagogical work; - able to prepare scientific papers and conference presentations; - able to professionally use complex environments and tools for systems analysis and modeling, and/or software development tasks; - able to choose the appropriate software products, tools and methods (including artificial intelligence methods) for solving problems; - able to implement and apply theoretical concepts of computer science; - able to organize and manage a group of software developers, analyze work results; - able to improve independently their competencies; - able to perform innovations in software engineering industry.
Final/state examination procedure, assessment	<p>To receive the academic degree of Master of Engineering in Computer Systems, students must accomplish the syllabus and work out and defend their Master Thesis. The volume of the Master Thesis is 20 credit points, which are divided as follows: 4 credit points during the first study year and 16 credit points during the second study year. Master Thesis must be defended publicly in front of thesis definition committee where the student presents his/her thesis and answers the questions asked by the committee, reviewer and general audience.</p> <p>A reviewer with Doctoral degree is appointed for the evaluation of the paper. The guidelines for contents and public defence are laid out in "Instructions for working out Master Paper" published by the Institute of Applied Computer Systems.</p>
Description of the future employment	<p>Graduates can start working in information technology companies (or in IT departments of other companies) within software development projects playing a variety of roles such as system analysts, architects and designers, programmers, test engineers, technical writers, and managing development teams and projects. The graduates are ready to continue research work at scientific institutions.</p>
Special enrollment requirements	
Opportunity to continue studies	Graduates of this study program can continue studies at Doctoral study level.

Courses

No	Code	Name	Credit points
A		Compulsory Study Courses	36.0
1	DIP485	Software Metrology and Planning Models	4.0
2	DSP451	Large Databases	4.0
3	DPI502	Object-Oriented System Analysis	4.0
4	DSP422	Artificial Intelligence	4.0
5	DPI738	Testing and Software Quality	4.0
6	DIP414	Computer Aided Solution Processing	4.0
7	DPI503	Evolution of Object-Oriented Software	4.0
8	DIP501	Special Data Processing Technologies	4.0
9	DSP555	Requirements Engineering	4.0
B		Compulsory Elective Study Courses	20.0
B1		Field-Specific Study Courses	16.0
		<i>Computer Systems Design</i>	<i>16.0</i>
1	DSP411	Theory of Systems and Processes	4.0
2	DSP412	Computer System Design scientific seminar	2.0
3	DSP505	Computer System Design Methods (scientific seminar)	2.0
4	DSP450	Information Systems and CASE Tools	4.0
5	DSP560	Knowledge Management	4.0
6	DSP779	Advanced Analytics and Knowledge Technologies	4.0
		<i>Applied Computer Science</i>	<i>16.0</i>
1	DPI538	Software Quality	4.0
2	DPI402	Workshop on Applied Computer Science	4.0
3	DPI504	CASE Tools for Object-Oriented System Development	4.0
4	DPI508	Methods and Evolution Trends of Applied Computer Science	4.0
		<i>Software for Applied Computer Systems</i>	<i>16.0</i>
1	DIP415	Network Software	4.0
2	DIP484	Applied Software Systems (scientific seminar)	2.0
3	DIP409	Advanced Software Technologies (scientific seminar)	2.0
4	DIP483	Development Methods of Applied Intelligent Software Systems	4.0
5	DIP513	Theory of Software Reliability	4.0
B2		Humanities and Social Sciences Study Courses	4.0
1	HSP483	Industrial Relations	2.0
2	HSP488	Business Sociology	2.0
3	HSP430	Social Psychology	2.0
4	HFL432	Ethics	2.0
5	HFL433	Presentation Skills	2.0
6	HSP446	Pedagogy	2.0
7	HSP484	Psychology	2.0
C		Free Elective Study Courses	4.0
E		Final Examination	20.0
1	DSP002	Master Thesis	20.0
2	DPI002	Master Thesis	20.0
3	DIP002	Master Thesis	20.0