

University of Oulu

Computer Science and Engineering, Master's Degree Programme (2 years) 2018-2019

Master of Science (Technology), 120 ECTS Credits

Specialization Options (only one options is selected)										
I Artificial Intelligence Orientation										
Code	Title	ECTS	1st autumn		1st spring		2nd autumn		2nd spring	
			1	2	3	4	1	2	3	4
Specialization Options, Artificial Intelligence , Compulsory Courses 55 ECTS cr										
031025A	Introduction to Optimization	5.0	5,0							
813621S	Research Methods	5.0	2,5	2,5						
521156S	Towards Data Mining	5.0	5,0							
521273S	Biosignal Processing I	5.0		5,0						
521158S	Natural Language Processing and Text Mining	5.0		5,0						
521466S	Machine Vision	5.0			5,0					
521289S	Machine Learning	5.0			5,0					
521283S	Big Data Processing and Applications	5.0				5,0				
521140S	Computer Graphics	5.0				5,0				
521285S	Affective Computing	5.0					5,0			
521161S	Multi-modal Data Fusion	5.0						5,0		
Specialization Options, Artificial Intelligence, Recommended Optional Studies, minimum 30 ECTS cr										
	Choose f.g. from the following courses total 30 ECTS cr.	30.0	2,5	2,5	5,0	5,0	5,0		5,0	5,0
521495A	Artificial Intelligence	5.0			0.0				0.0	
521348S	Statistical Signal Processing	5.0	0.0				0.0			
521045S	Mobile Computing	5.0			0.0	0.0			0.0	0.0
521467A	Digital Image Processing	5.0	0.0				0.0			
521489S	Research Work on Information Processing	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
521148S	Ubiquitous Computing Fundamentals	5.0	0.0	0.0			0.0	0.0		
521260S	Programmable Web Project	5.0			0.0	0.0			0.0	0.0
521155S	Computer Security	5.0	0.0				0.0			
521282S	Biosignal Processing II	5.0				0.0				0.0
521157A	Introduction to Social Network Analysis	5.0		0.0				0.0		
521145A	Human-Computer Interaction	5.0		0.0				0.0		
521290S	Distributed Systems	5.0			0.0				0.0	
Optional Studies for Foreign Language Students Only:										
900017Y	Survival Finnish Course	2.0	0.0							
900013Y	Beginners' Finnish Course 1	3.0		0.0						
Supplementary Module										

-	Supplementary module can include for example courses from the basic module of another orientation.	0.0									
Common Obligatory Courses, 35 ECTS cr											
521027S	Advanced Practical Training	5.0						5,0			
521993S	Master's Thesis in Computer Engineering	30.0							10,0	10,0	10,0
521009S	Computer Science and Engineering, The Maturity Test for Master's Degree	0.0									0.0
Specialization Options, Artificial Intelligence					30,0		30,0		30,0		30,0
Specialization Options, Artificial Intelligence							60,0				60,0
II Applied Computing Orientation											
		Year/Term	1st autumn		1st spring		2nd autumn		2nd spring		
Code	Title	ECTS	1	2	3	4	1	2	3	4	
Specialization Options, Applied Computing , Compulsory Courses 62 ECTS cr											
521148S	Ubiquitous Computing Fundamentals	5.0	2,5	2,5							
813621S	Research Methods	5.0	2,5	2,5							
521479S	Software Project	7.0	3,5	3,5							
521158S	Natural Language Processing and Text Mining	5.0		5,0							
521290S	Distributed Systems	5.0				5,0					
521042S	Creative Design	5.0				5,0					
521260S	Programmable Web Project	5.0				2,5	2,5				
521045S	Mobile Computing	5.0				2,5	2,5				
521043S	Internet of Things	5.0				5,0					
521283S	Big Data Processing and Applicationsm	5.0				5,0					
521152S	Applied Computing Project II	10.0						2,5	2,5	2,5	2,5
Specialization Options, Applied Computing, Recommended Optional Studies, minimum 23 ECTS cr											
	Choose f.g. from the following courses total 23 ECTS cr.	23.0	6,5	1,5				7,5	2,5	2,5	2,5
521149S	Special Course in Information Technology	5.0-8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
521489S	Research Work on Information Processing	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
521154S	UBISS - International UBI Summer School	5.0									
815657S	Open Source Software Development	5.0	0.0	0.0			0.0	0.0			
815305A	Real Time Distributed Software Development	5.0	0.0	0.0			0.0	0.0			
817603S	System Design Methods for Information Systems	5.0	0.0				0.0				
813625S	Information Systems Theory	5.0	0.0	0.0			0.0	0.0			
521423S	Embedded System Project	5.0				0.0	0.0			0.0	0.0
521286A	Computer Systems	8.0	0.0	0.0			0.0	0.0			
521275A	Embedded Software Project	8.0				0.0	0.0			0.0	0.0
812671S	Usability Testing (or 812650S)	5.0				0.0	0.0			0.0	0.0
521041A	Applied Computing Project I	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
812331A	Interaction Design	5.0	0.0				0.0				
812650S	Advanced Topics in Human-Centred Design	5.0				0.0				0.0	
Optional Studies for Foreign Language Students Only:											

900017Y	Survival Finnish Course	2.0	0.0								
900013Y	Beginners' Finnish Course 1	3.0		0.0							
Supplementary Module											
-	Supplementary module can include for example courses from the basic module of another orientation.	0.0									
Common Obligatory Courses, 35 ECTS cr											
521027S	Advanced Practical Training	5.0						5,0			
521993S	Master's Thesis in Computer Engineering	30.0							10,0	10,0	10,0
521009S	Computer Science and Engineering, The Maturity Test for Master's Degree	0.0									0.0
Applied Computing Orientation				30,0		30,0			30,0		30,0
Applied Computing Orientation						60,0					60,0
III Computer Engineering Orientation											
		Year/Term	1st autumn		1st spring		2nd autumn		2nd spring		
Code	Title	ECTS	1	2	3	4	1	2	3	4	
Specialization Options, Computer Engineering , Compulsory Courses, Basic Module 37 op											
521479S	Software Project	7.0	3,5	3,5							
521155S	Computer Security	5.0	5,0								
521279S	Signal Processing Systems	5.0		5,0							
521288S	Multiprocessor Programming	5.0			2,5	2,5					
521423S	Embedded System Project	5.0			2,5	2,5					
521043S	Internet of Things	5.0				5,0					
521281S	Application Specific Signal Processors	5.0					5,0				
Advanced Modules: 1. Electronics / Compulsory Courses, 22 op											
521404A	Digital Techniques 2	5.0		5,0							
521303A	Circuit Theory 2	5.0		5,0							
521406S	Digital Techniques 3	7.0			3,5	3,5					
521340S	Communication Networks I	5.0						5,0			
Advanced Modules: 1. Electronics / Optional Courses, 26op											
	Choose f.g. from the following courses total 26 ECTS cr.	26.0	3,0		6,5	1,5	5,0	10,0			
813621S	Research Methods	5.0	0.0	0.0			0.0	0.0			
521405A	Electronic System Design	5.0	0.0				0.0				
521323S	Wireless Communications I	5.0		0.0				0.0			
521443S	Electronics Design II	5.0	0.0				0.0				
521088S	Optoelectronics	5.0			0.0				0.0		
521489S	Research Work on Information Processing	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
521348S	Statistical Signal Processing	5.0				0.0					
521385S	Mobile Telecommunication Systems	5.0		0.0				0.0			
521304A	Filters	5.0			0.0				0.0		
521328A	Simulations and Tools for Telecommunications	5.0		0.0				0.0			
Optional Studies for Foreign Language Students Only:											
900017Y	Survival Finnish Course	2.0	0.0								
900013Y	Beginners' Finnish Course 1	3.0		0.0							
Advanced Modules: 2. Software / Compulsory Courses, 20 op											
521348S	Statistical Signal Processing	5.0	5,0								
521340S	Communication Networks I	5.0		5,0							

521290S	Distributed Systems	5.0			5,0					
521321S	Elements of Information Theory and Coding	5.0						5,0		
Advanced Modules: 2. Software / Optional Courses, 28 op										
	Choose f.g. from the following courses total 28 ECTS cr.	33.0	1,5	1,5	5,0	5,0	5,0	10,0		
521495A	Artificial Intelligence	5.0			0.0				0.0	
521337A	Digital Filters	5.0			0.0				0.0	
521467A	Digital Image Processing	5.0				0.0				0.0
521489S	Research Work on Information Processing	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
521148S	Ubiquitous Computing Fundamentals	5.0								
521283S	Big Data Processing and Applications	5.0								
813621S	Research Methods	5.0	0.0	0.0			0.0	0.0		
521145A	Human-Computer Interaction	5.0								
521260S	Programmable Web Project	5.0			0.0	0.0			0.0	0.0
031025A	Introduction to Optimization	5.0	0.0				0.0			
521466S	Machine Vision	5.0			0.0				0.0	
521289S	Machine Learning	5.0			0.0				0.0	
521140S	Computer Graphics	5.0				0.0				0.0
521156S	Towards Data Mining	5.0	0.0				0.0			
521273S	Biosignal Processing I	5.0		0.0				0.0		
Optional Studies for Foreign Language Students Only:										
900017Y	Survival Finnish Course	2.0	0.0							
900013Y	Beginners' Finnish Course 1	3.0		0.0						
Supplementary Module										
-	Supplementary module can include for example courses from the basic module of another orientation.	0.0								
Common Obligatory Courses, 35 ECTS cr										
521027S	Advanced Practical Training	5.0					5,0			
521993S	Master's Thesis in Computer Engineering	30.0						10,0	10,0	10,0
521009S	Computer Science and Engineering, The Maturity Test for Master`s Degree	0.0								0.0
	Computer Engineering Orientation 1. Advanced Modules: Electronics		30,0		30,0			30,0		30,0
	Computer Engineering Orientation 1. Advanced Modules: Electronics				60,0					60,0
	Computer Engineering Orientation 2. Advanced Modules: Software		30,0		30,0			30,0		30,0
	Computer Engineering Orientation 2. Advanced Modules: Software				60,0					60,0