1.	**Field of study**	**Computer Science**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2021/2022 (summer term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time
7.	Academic year for which the revised course structure applies	—

Obligatory courses

				form of teaching				year 1						year 2		
								semester 1			semester 2			semester 3		
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E
1	Algorithmics and advanced data structures	EN	E	60	30	30	4	30	30	4						
2	Computer simulations	EN	E	60	30	30	4	30	30	4						
3	Modern programming languages	EN	E	60	30	30	4	30	30	4						
4	Statistical analysis in research	EN	Z	30	15	15	2	15	15	2						
5	Computer network technologies	EN	Z	45	15	30	3				15	30	3			
6	Concurrent programming	EN	Z	30	15	15	2				15	15	2			
7	Data mining	EN	E	60	30	30	4				30	30	4			
8	Managing IT projects and teams	EN	Z	30	10	20	2				10	20	2			
9	Monographic lecture - Combinatorial machine learning	EN	Z	30	30		2				30		2			
10	General academic module (Humanities)	EN	Z	45		45	3								45	3
11	General academic module (Social Sciences)	EN	Z	30		30	2								30	2
12	Intellectual property protection	EN	Z	15	15		2							15		2
13	IT for the blind and visually impaired	EN	Z	15	15		2							15		2
14	Mathematical modeling of optimization problems	EN	Z	30	15	15	3							15	15	3
	TOTAL Obligatory courses:			**540**	**250**	**290**	**39**	**105**	**105**	**14**	**100**	**95**	**13**	**45**	**90**	**12**

Diploma courses

				form of teaching				year 1						year 2		
								semester 1			semester 2			semester 3		
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E
1	Diploma courses group I **[see description below]*	*	*	135	45	90	12	45	90	12						
2	Introduction to scientific research.	EN	Z	2		2	1		2	1						
3	Master's seminar I	EN	Z	15		15	2		15	2						
4	Monographic lecture	EN	Z	20	20		1	20		1						
5	Diploma courses group II **[see description below]*	*	*	135	45	90	12				45	90	12			
6	Master's seminar II	EN	Z	30		30	2					30	2			
7	Master's workshop I	EN	Z	45		45	3					45	3			
8	Diploma courses group III **[see description below]*	*	*	45	15	30	4							15	30	4
9	Master's seminar III - thesis preparation	EN	Z	30		30	9								30	9

10	Master's workshop II	EN	Z	45		45	5										45	5	
	TOTAL Diploma courses:			**502**	**125**	**377**	**51**	**65**	**107**	**16**	**45**	**165**	**17**	**15**	**105**	**18**			
	TOTAL:			**1042**	**375**	**667**	**90**	**382**		**30**	**405**		**30**	**255**		**30**			
TOTAL								**1042**											

The study ends with the awarding of a Master's Degree in the field of Computer Science.

* Groups of modules

Diploma courses group I

Description:						
The student chooses three modules from the list. No module may be repeated during the entire course of education.						
Modules:	Lang.	**E/C**	**L**	**O**	**ECTS**	
Administration of network services	EN	C	15	30	4	
Advanced methods of data analysis	EN	C	15	30	4	
Algorithmically generated graphics	EN	C	15	30	4	
Artificial intelligence in computer graphics	EN	C	15	30	4	
Biometric recognition and access control systems	EN	C	15	30	4	
Cloud computing technologies	EN	C	15	30	4	
Cluster analysis algorithms in applications	EN	C	15	30	4	
Computational geometry	EN	C	15	30	4	
Computational intelligence techniques	EN	C	15	30	4	
Data analysis in business	EN	C	15	30	4	
Data visualization	EN	C	15	30	4	
Data warehouses	EN	C	15	30	4	
Decision and association rules in knowledge data discovery	EN	C	15	30	4	
Decision support systems	EN	C	15	30	4	
Deep learning with neural networks	EN	C	15	30	4	
Fractal methods in computer graphics	EN	C	15	30	4	
Fuzzy sets nad systems	EN	C	15	30	4	
GPGPU computing	EN	C	15	30	4	
Image and video processing techniques	EN	C	15	30	4	
Image processing algorithms in biometrics and bioinformatics	EN	C	15	30	4	
Intelligent data processing	EN	C	15	30	4	
Internet of things technologies	EN	C	15	30	4	
Internet protocols	EN	C	15	30	4	
Introduction to data classificatin and clusterization in biometry	EN	C	15	30	4	
Introduction to reverse engineering	EN	C	15	30	4	
Machine learning in biometrics and bioinformatics	EN	C	15	30	4	
Methods of group decision making	EN	C	15	30	4	
Microcomputers and network couplers	EN	C	15	30	4	
Mobile systems and applications	EN	C	15	30	4	
Network systems security	EN	C	15	30	4	
Object-relational database systems in biometry	EN	C	15	30	4	
Outlier detection algorithms	EN	C	15	30	4	

Procedural content generation	EN	C	15	30	4
Real-time graphics	EN	C	15	30	4
Recommendation systems and social networks	EN	C	15	30	4
Scripting languages in data analysis	EN	C	15	30	4
Selected graph algorithms	EN	C	15	30	4
Techniques for optimizing computer programs	EN	C	15	30	4
The concept of programming languages	EN	C	15	30	4
Web applications	EN	C	15	30	4
Wireless and sensor networks	EN	C	15	30	4

Diploma courses group II

Description:					
The student chooses three modules from the list. No module may be repeated during the entire course of education.					
Modules:	Lang.	**E/C**	**L**	**O**	**ECTS**
Administration of network services	EN	C	15	30	4
Advanced methods of data analysis	EN	C	15	30	4
Algorithmically generated graphics	EN	C	15	30	4
Artificial intelligence in computer graphics	EN	C	15	30	4
Biometric recognition and access control systems	EN	C	15	30	4
Cloud computing technologies	EN	C	15	30	4
Cluster analysis algorithms in applications	EN	C	15	30	4
Computational geometry	EN	C	15	30	4
Computational intelligence techniques	EN	C	15	30	4
Data analysis in business	EN	C	15	30	4
Data visualization	EN	C	15	30	4
Data warehouses	EN	C	15	30	4
Decision and association rules in knowledge data discovery	EN	C	15	30	4
Decision support systems	EN	C	15	30	4
Deep learning with neural networks	EN	C	15	30	4
Fractal methods in computer graphics	EN	C	15	30	4
Fuzzy sets nad systems	EN	C	15	30	4
GPGPU computing	EN	C	15	30	4
Image and video processing techniques	EN	C	15	30	4
Image processing algorithms in biometrics and bioinformatics	EN	C	15	30	4
Intelligent data processing	EN	C	15	30	4
Internet of things technologies	EN	C	15	30	4
Internet protocols	EN	C	15	30	4
Introduction to data classificatin and clusterization in biometry	EN	C	15	30	4
Introduction to reverse engineering	EN	C	15	30	4
Machine learning in biometrics and bioinformatics	EN	C	15	30	4
Methods of group decision making	EN	C	15	30	4
Microcomputers and network couplers	EN	C	15	30	4
Mobile systems and applications	EN	C	15	30	4
Network systems security	EN	C	15	30	4
Object-relational database systems in biometry	EN	C	15	30	4

Outlier detection algorithms	EN	C	15	30	4
Procedural content generation	EN	C	15	30	4
Real-time graphics	EN	C	15	30	4
Recommendation systems and social networks	EN	C	15	30	4
Scripting languages in data analysis	EN	C	15	30	4
Selected graph algorithms	EN	C	15	30	4
Techniques for optimizing computer programs	EN	C	15	30	4
The concept of programming languages	EN	C	15	30	4
Web applications	EN	C	15	30	4
Wireless and sensor networks	EN	C	15	30	4

Diploma courses group III

Description:					
The student chooses three modules from the list. No module may be repeated during the entire course of education.					
Modules:	Lang.	**E/C**	**L**	**O**	**ECTS**
Administration of network services	EN	C	15	30	4
Advanced methods of data analysis	EN	C	15	30	4
Algorithmically generated graphics	EN	C	15	30	4
Artificial intelligence in computer graphics	EN	C	15	30	4
Biometric recognition and access control systems	EN	C	15	30	4
Cloud computing technologies	EN	C	15	30	4
Cluster analysis algorithms in applications	EN	C	15	30	4
Computational geometry	EN	C	15	30	4
Computational intelligence techniques	EN	C	15	30	4
Data analysis in business	EN	C	15	30	4
Data visualization	EN	C	15	30	4
Data warehouses	EN	C	15	30	4
Decision and association rules in knowledge data discovery	EN	C	15	30	4
Decision support systems	EN	C	15	30	4
Deep learning with neural networks	EN	C	15	30	4
Fractal methods in computer graphics	EN	C	15	30	4
Fuzzy sets nad systems	EN	C	15	30	4
GPGPU computing	EN	C	15	30	4
Image and video processing techniques	EN	C	15	30	4
Image processing algorithms in biometrics and bioinformatics	EN	C	15	30	4
Intelligent data processing	EN	C	15	30	4
Internet of things technologies	EN	C	15	30	4
Internet protocols	EN	C	15	30	4
Introduction to data classificatin and clusterization in biometry	EN	C	15	30	4
Introduction to reverse engineering	EN	C	15	30	4
Machine learning in biometrics and bioinformatics	EN	C	15	30	4
Methods of group decision making	EN	C	15	30	4
Microcomputers and network couplers	EN	C	15	30	4
Mobile systems and applications	EN	C	15	30	4
Network systems security	EN	C	15	30	4

Object-relational database systems in biometry	EN	C	15	30	4
Outlier detection algorithms	EN	C	15	30	4
Procedural content generation	EN	C	15	30	4
Real-time graphics	EN	C	15	30	4
Recommendation systems and social networks	EN	C	15	30	4
Scripting languages in data analysis	EN	C	15	30	4
Selected graph algorithms	EN	C	15	30	4
Techniques for optimizing computer programs	EN	C	15	30	4
The concept of programming languages	EN	C	15	30	4
Web applications	EN	C	15	30	4
Wireless and sensor networks	EN	C	15	30	4

Legend

Each semester consists of 15 weeks
E/C - examination/course work
E - ECTS
L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)