

1.	<b>Field of study</b>	<b>Computer Science</b>
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2022/2023 (summer term), 2023/2024 (winter term), 2023/2024 (summer term), 2024/2025 (winter term), 2024/2025 (summer term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	part-time
7.	Academic year for which the revised course structure applies	2022/2023

Obligatory courses										year 1						year 2		
										semester 1			semester 2			semester 3		
No.	Module	Lang.	E/C	form of teaching			Total ECTS	L	O	E	L	O	E	L	O	E		
				Total	L	O												
1	Algorithmics and Advanced Data Structures	PL	E	40	20	20	4	20	20	4								
2	Computer network technologies	PL	Z	30	10	20	3	10	20	3								
3	Computer simulations	PL	E	40	20	20	4	20	20	4								
4	Concurrent programming	PL	Z	20	10	10	3	10	10	3								
5	Data mining	PL	E	40	20	20	4	20	20	4								
6	Intellectual property protection	PL	Z	10	10		2	10		2								
7	IT for the Blind and Visually Impaired	PL	Z	10	10		2	10		2								
8	Modern programming languages	PL	E	40	20	20	4	20	20	4								
9	Managing IT projects and teams	PL	Z	30	10	20	2				10	20	2					
10	Mathematical modeling of optimization problems	PL	Z	20	10	10	3				10	10	3					
11	Monographic lecture - Combinatorial machine learning	EN	Z	20	20		2				20		2					
12	Statistical analysis in research	PL	Z	20	10	10	2				10	10	2					
13	General academic module (Humanities)	-	Z	14		14	3								14	3		
14	General academic module (Social Sciences)	-	Z	14		14	3								14	3		
<b>TOTAL Obligatory courses:</b>				<b>348</b>	<b>170</b>	<b>178</b>	<b>41</b>	<b>120</b>	<b>110</b>	<b>26</b>	<b>50</b>	<b>40</b>	<b>9</b>	<b>0</b>	<b>28</b>	<b>6</b>		

Diploma courses										year 1						year 2		
										semester 1			semester 2			semester 3		
No.	Module	Lang.	E/C	form of teaching			Total ECTS	L	O	E	L	O	E	L	O	E		
				Total	L	O												
1	Introduction to scientific research.	PL	Z	2		2	1		2	1								
2	Master's seminar I	PL	Z	15		15	2		15	2								
3	Monographic lecture	PL	Z	12	12		1	12		1								
4	Diploma courses group I <i>*[see description below]</i>	*	*	180	60	120	16				60	120	16					
5	Master's seminar II	PL	Z	30		30	2				30	2						
6	Master's workshop	PL	Z	45		45	3				45	3						
7	Diploma courses group II <i>*[see description below]</i>	*	*	135	45	90	12							45	90	12		
8	Master's seminar III	PL	Z	30		30	8							30	8			

9	Master's workshop	PL	Z	45		45	5								45	5				
				<b>TOTAL Diploma courses:</b>				494	117	377	50	12	17	4	60	195	21	45	165	25
				<b>TOTAL:</b>				842	287	555	91	259	30	345	30	238	31			
<b>TOTAL</b>														<b>842</b>						

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

## \* Groups of modules

### Diploma courses group I

<b>Description:</b>									
The student selects three modules from the list. In the course of the whole education, no module can be repeated.									
<b>Modules:</b>					Lang.	E/C	L	O	ECTS
Administration of network services					PL	C	15	30	4
Cloud computing technologies					PL	C	15	30	4
cluster analysis algorithms in applications					PL	C	15	30	4
Computational intelligence techniques					PL	C	15	30	4
Data analysis in business					PL	C	15	30	4
Data visualization					PL	C	15	30	4
Data warehouses					PL	C	15	30	4
Decision and association rules in knowledge data discovery					PL	C	15	30	4
Deep learning with neuralk networks					PL	C	15	30	4
intelligent data processing					PL	C	15	30	4
Internet of Things technologies					PL	C	15	30	4
Internet protocols					PL	C	15	30	4
Methods of group decision making					PL	C	15	30	4
Microcomputers and network couplers					PL	C	15	30	4
Mobile systems and applications					PL	C	15	30	4
Network Systems Security					PL	C	15	30	4
Outlier detection algorithms					PL	C	15	30	4
Recommendation systems and social networks					PL	C	15	30	4
Script languages in data analysis					PL	C	15	30	4
Selected graph algorithms					PL	C	15	30	4
Systemy wspomaganie decyzji					PL	C	15	30	4
Techniques for optimizing computer programs					PL	C	15	30	4
The concept of programming languages					PL	C	15	30	4
Web applications					PL	C	15	30	4
Wireless and sensor networks					PL	C	15	30	4

### Diploma courses group II

<b>Description:</b>									
The student selects three modules from the list. In the course of the whole education, no module can be repeated.									
<b>Modules:</b>					Lang.	E/C	L	O	ECTS
Administration of network services					PL	C	15	30	4
Cloud computing technologies					PL	C	15	30	4

cluster analysis algorithms in applications	PL	C	15	30	4
Computational intelligence techniques	PL	C	15	30	4
Data analysis in business	PL	C	15	30	4
Data visualization	PL	C	15	30	4
Data warehouses	PL	C	15	30	4
Decision and association rules in knowledge data discovery	PL	C	15	30	4
Deep learning with neural networks	PL	C	15	30	4
intelligent data processing	PL	C	15	30	4
Internet of Things technologies	PL	C	15	30	4
Internet protocols	PL	C	15	30	4
Methods of group decision making	PL	C	15	30	4
Microcomputers and network couplers	PL	C	15	30	4
Mobile systems and applications	PL	C	15	30	4
Network Systems Security	PL	C	15	30	4
Outlier detection algorithms	PL	C	15	30	4
Recommendation systems and social networks	PL	C	15	30	4
Script languages in data analysis	PL	C	15	30	4
Selected graph algorithms	PL	C	15	30	4
Systemy wspomaganie decyzji	PL	C	15	30	4
Techniques for optimizing computer programs	PL	C	15	30	4
The concept of programming languages	PL	C	15	30	4
Web applications	PL	C	15	30	4
Wireless and sensor networks	PL	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)