

1.	Field of study	Informatics
2.	Academic year of entry	2016/2017 (summer term)
3.	Level of qualifications/degree	second degree studies
4.	Degree profile	general academic
5.	Mode of study	full-time

Specialization: Computer Graphics and Visualization

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Advanced algorithm and data structures	E	60	30	30	5	30	30	5								
2	Programming paradigms	E	60	30	30	5	30	30	5								
3	Development and configuration of computer networks	Z	30	10	20	2				10	20	2					
4	Elective courses I <i>*[see description below]</i>	*	135	45	90	9				45	90	9					
5	Elective courses II <i>*[see description below]</i>	*	45	15	30	3							15	30	3		
TOTAL Field of study courses:			330	130	200	24	60	60	10	55	110	11	15	30	3		

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Intelligent Computer Graphics	E	60	15	45	3	15	45	3								
2	Monographic's lecture	Z	30	30		2	30		2								
3	Non-photorealistic Graphics	Z	45	15	30	3	15	30	3								
4	Specialization project I	Z	45		45	2		45	2								
5	Video processing techniques	E	60	15	45	3	15	45	3								
6	Computational Geometry	Z	45	15	30	3				15	30	3					
7	Development of 3D graphical engines	Z	45	15	30	2				15	30	2					
8	Specialization project II	Z	30		30	2				30	2						
9	Specialized systems of data visualization	Z	45	15	30	3				15	30	3					
10	General-Purpose computing on Graphics Processing Units	Z	60	15	45	3							15	45	3		
11	Graphics in Mobile Devices	Z	45	15	30	3							15	30	3		
12	Specialization project III	Z	15		15	1								15	1		
TOTAL Specialised subjects:			525	150	375	30	75	165	13	45	120	10	30	90	7		

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Industrial property protection	Z	30	10	20	3	10	20	3								
2	Master's seminar I	Z	15		15	4		15	4								

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2		
			Total	L	O		semester 1			semester 2			semester 3		
							L	O	E	L	O	E	L	O	E
3	Managing project teams	Z	30	10	20	2				10	20	2			
4	Master's seminar II	Z	30		30	4				30	4				
5	Master's workshop I	Z	30		30	3				30	3				
6	Management of IT projects	Z	30	10	20	2							10	20	2
7	Master's seminar III - preparation of master thesis	Z	30		30	12								30	12
8	Master's workshop II	Z	45		45	6								45	6
TOTAL Other requirements:			240	30	210	36	10	35	7	10	80	9	10	95	20
TOTAL (A+B+C):			1095	310	785	90	405	30	420	30	270	30			
TOTAL						1095									

Studia kończą się nadaniem tytułu zawodowego magistra na kierunku Informatics.

Specialization: Informatics for Biomedical Engineers

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2		
			Total	L	O		semester 1			semester 2			semester 3		
							L	O	E	L	O	E	L	O	E
1	Advanced algorithm and data structures	E	60	30	30	5	30	30	5						
2	Programming paradigms	E	60	30	30	5	30	30	5						
3	Development and configuration of computer networks	Z	30	10	20	2				10	20	2			
4	Elective courses I <i>*[see description below]</i>	*	135	45	90	9				45	90	9			
5	Elective courses II <i>*[see description below]</i>	*	45	15	30	3							15	30	3
TOTAL Field of study courses:			330	130	200	24	60	60	10	55	110	11	15	30	3

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2		
			Total	L	O		semester 1			semester 2			semester 3		
							L	O	E	L	O	E	L	O	E
1	Computer Systems Security	Z	45		45	2		45	2						
2	Hardware Construction and Diagnostics	Z	45		45	2		45	2						
3	Information Systems Administration	Z	45	15	30	3	15	30	3						
4	Java language programming	E	60	15	45	3	15	45	3						
5	Managing computer networks and servers	Z	45	15	30	3	15	30	3						
6	Advanced programming techniques	Z	45		45	2				45	2				
7	Intra- and Internet services development	Z	45	15	30	3				15	30	3			
8	Mobile and web technologies	Z	45	15	30	3				15	30	3			
9	Team specialized project	Z	30		30	2				30	2				
10	Computer Graphics and Multimedia	Z	60	15	45	3							15	45	3
11	Specialized databases and data base systems	E	60	15	45	4							15	45	4
TOTAL Specialised subjects:			525	105	420	30	45	195	13	30	135	10	30	90	7

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2					
			Total	L	O		semester 1			semester 2			semester 3					
							L	O	E	L	O	E	L	O	E			

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2					
			Total	L	O		semester 1			semester 2			semester 3					
							L	O	E	L	O	E	L	O	E			
1	Industrial property protection	Z	30	10	20	3	10	20	3									
2	Master's seminar I	Z	15		15	4		15	4									
3	Managing project teams	Z	30	10	20	2				10	20	2						
4	Master's seminar II	Z	30		30	4					30	4						
5	Master's workshop I	Z	30		30	3					30	3						
6	Management of IT projects	Z	30	10	20	2								10	20	2		
7	Master's seminar III - preparation of master thesis	Z	30		30	12									30	12		
8	Master's workshop II	Z	45		45	6									45	6		
TOTAL Other requirements:			240	30	210	36	10	35	7	10	80	9	10	95	20			
TOTAL (A+B+C):			1095	265	830	90	405	30	420	30	270	30						
TOTAL						1095												

Studia kończą się nadaniem tytułu zawodowego magistra na kierunku Informatics.

Specialization: Intelligence Information Systems

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2					
			Total	L	O		semester 1			semester 2			semester 3					
							L	O	E	L	O	E	L	O	E			
1	Advanced algorithm and data structures	E	60	30	30	5	30	30	5									
2	Programming paradigms	E	60	30	30	5	30	30	5									
3	Development and configuration of computer networks	Z	30	10	20	2				10	20	2						
4	Elective courses I <i>*[see description below]</i>	*	135	45	90	9				45	90	9						
5	Elective courses II <i>*[see description below]</i>	*	45	15	30	3							15	30	3			
TOTAL Field of study courses:			330	130	200	24	60	60	10	55	110	11	15	30	3			

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2					
			Total	L	O		semester 1			semester 2			semester 3					
							L	O	E	L	O	E	L	O	E			
1	Decision support systems	Z	60	30	30	4	30	30	4									
2	Development of web-based solutions	Z	60	15	45	3	15	45	3									
3	Programming mobile devices	E	60	15	45	3	15	45	3									
4	RAD programming environments	Z	60	30	30	3	30	30	3									

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
5	Artificial Intelligence Algorithms	E	45	15	30	3				15	30	3					
6	Data base programming	Z	45	15	30	3				15	30	3					
7	Data Mining	Z	45	15	30	3				15	30	3					
8	Software testing and verification	Z	30		30	1					30	1					
9	Data Analysis in Business	Z	45	15	30	3							15	30	3		
10	Methods of analysis and modeling systems	Z	30		30	1								30	1		
11	Security of Information Systems	Z	45	15	30	3							15	30	3		
TOTAL Specialised subjects:			525	165	360	30	90	150	13	45	120	10	30	90	7		

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Industrial property protection	Z	30	10	20	3	10	20	3								
2	Master's seminar I	Z	15		15	4		15	4								
3	Managing project teams	Z	30	10	20	2				10	20	2					
4	Master's seminar II	Z	30		30	4					30	4					
5	Master's workshop I	Z	30		30	3					30	3					
6	Management of IT projects	Z	30	10	20	2							10	20	2		
7	Master's seminar III - preparation of master thesis	Z	30		30	12								30	12		
8	Master's workshop II	Z	45		45	6								45	6		
TOTAL Other requirements:			240	30	210	36	10	35	7	10	80	9	10	95	20		
TOTAL (A+B+C):			1095	325	770	90	405	30		420	30		270	30			
TOTAL						1095											

Studia kończą się nadaniem tytułu zawodowego magistra na kierunku Informatics.

Specialization: Internet Engineering

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Advanced algorithm and data structures	E	60	30	30	5	30	30	5								
2	Programming paradigms	E	60	30	30	5	30	30	5								
3	Development and configuration of computer networks	Z	30	10	20	2				10	20	2					
4	Elective courses I <i>[see description below]</i>	*	135	45	90	9				45	90	9					

5	Elective courses II *[see description below]	*	45	15	30	3							15	30	3
TOTAL Field of study courses:			330	130	200	24	60	60	10	55	110	11	15	30	3

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2			
			Total	L	O		semester 1			semester 2			semester 3			
							L	O	E	L	O	E	L	O	E	
1	Front-end and Back-end Applications Security	E	45	15	30	3	15	30	3							
2	Internet protocols	Z	45	15	30	3	15	30	3							
3	Microcomputers and network couplers	Z	60	15	45	3	15	45	3							
4	Parallel Computing Engineering	Z	45	15	30	2	15	30	2							
5	Selected methods of data mining	Z	45	15	30	2	15	30	2							
6	Modern mobile technologies	E	60	15	45	4				15	45	4				
7	Services Servers Administration	Z	45	15	30	3				15	30	3				
8	Web applications	Z	60	15	45	3				15	45	3				
9	Activation of application on computing cluster	Z	30		30	2									30	2
10	Configuration and Administration of Hybrid Networks	Z	45		45	3									45	3
11	Wireless Sensor Networks	Z	45	15	30	2								15	30	2
TOTAL Specialised subjects:			525	135	390	30	75	165	13	45	120	10	15	105	7	

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2			
			Total	L	O		semester 1			semester 2			semester 3			
							L	O	E	L	O	E	L	O	E	
1	Industrial property protection	Z	30	10	20	3	10	20	3							
2	Master's seminar I	Z	15		15	4		15	4							
3	Managing project teams	Z	30	10	20	2				10	20	2				
4	Master's seminar II	Z	30		30	4					30	4				
5	Master's workshop I	Z	30		30	3					30	3				
6	Management of IT projects	Z	30	10	20	2								10	20	2
7	Master's seminar III - preparation of master thesis	Z	30		30	12									30	12
8	Master's workshop II	Z	45		45	6									45	6
TOTAL Other requirements:			240	30	210	36	10	35	7	10	80	9	10	95	20	
TOTAL (A+B+C):			1095	295	800	90	405	30	420	30	270	30				
TOTAL												1095				

Studia kończą się nadaniem tytułu zawodowego magistra na kierunku Informatics.

Specialization: Software Quality Engineering

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2			
			Total	L	O		semester 1			semester 2			semester 3			
							L	O	E	L	O	E	L	O	E	
1	Advanced algorithm and data structures	E	60	30	30	5	30	30	5							

Field of study courses

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
2	Programming paradigms	E	60	30	30	5	30	30	5								
3	Development and configuration of computer networks	Z	30	10	20	2				10	20	2					
4	Elective courses I <i>*[see description below]</i>	*	135	45	90	9				45	90	9					
5	Elective courses II <i>*[see description below]</i>	*	45	15	30	3							15	30	3		
TOTAL Field of study courses:			330	130	200	24	60	60	10	55	110	11	15	30	3		

Specialised subjects

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Advanced object programming	Z	45	15	30	2	15	30	2								
2	Automation in the Process of Software Development	Z	60	30	30	3	30	30	3								
3	Machine Learning Algorithms	E	60	30	30	4	30	30	4								
4	Optimization techniques	E	45	15	30	3	15	30	3								
5	Security of Information Systems	Z	30	15	15	1	15	15	1								
6	Concurrent programming	E	60	30	30	4				30	30	4					
7	Declarative Languages	Z	45	30	15	3				30	15	3					
8	Methods of computational intelligence	E	60	30	30	3				30	30	3					
9	Advanced object designing	Z	45	15	30	3							15	30	3		
10	Programming with use of agile methodologies	Z	45	15	30	3							15	30	3		
11	Team project	Z	30		30	1								30	1		
TOTAL Specialised subjects:			525	225	300	30	105	135	13	90	75	10	30	90	7		

Other requirements

No.	Module	E/C	form of teaching			Total ECTS	year 1						year 2				
			Total	L	O		semester 1			semester 2			semester 3				
							L	O	E	L	O	E	L	O	E		
1	Industrial property protection	Z	30	10	20	3	10	20	3								
2	Master's seminar I	Z	15		15	4		15	4								
3	Managing project teams	Z	30	10	20	2				10	20	2					
4	Master's seminar II	Z	30		30	4				30	4						
5	Master's workshop I	Z	30		30	3				30	3						
6	Management of IT projects	Z	30	10	20	2							10	20	2		
7	Master's seminar III - preparation of master thesis	Z	30		30	12								30	12		
8	Master's workshop II	Z	45		45	6								45	6		
TOTAL Other requirements:			240	30	210	36	10	35	7	10	80	9	10	95	20		
TOTAL (A+B+C):			1095	385	710	90	405	30	420	30	270	30					
TOTAL						1095											

Studia kończą się nadaniem tytułu zawodowego magistra na kierunku Informatics.

* Groups of modules

Elective courses I

Description:				
Second semester students choose 3 modules from the list. Modules throughout the learning process can not repeat themselves.				
Modules:	E/C	L	O	ECTS
Advanced methods of image processing and analysis	C	15	30	3
Basics of biometric systems development	C	15	30	3
Computational Geometry	C	15	30	3
Data base programming	C	15	30	3
Data Mining	C	15	30	3
Data Warehouses	C	15	30	3
Declarative Languages	C	30	15	3
Haskell Programming Language	C	15	30	3
Interactive Computer Graphics	C	15	30	3
Intra- and Internet services development	C	15	30	3
IT systems utility	E	15	30	3
Mobile and web technologies	C	15	30	3
Services Servers Administration	C	15	30	3
Specialized systems of data visualization	C	15	30	3
Test Automation in Agile Development	C	15	30	3
Tools supporting software development	C	15	30	3

Elective courses II

Description:				
Third semester students choose 1 module from the list. Modules throughout the learning process can not repeat themselves.				
Modules:	E/C	L	O	ECTS
Advanced methods of image processing and analysis	C	15	30	3
Advanced object designing	C	15	30	3
Basics of biometric systems development	C	15	30	3
Configuration and Administration of Hybrid Networks	C		45	3
Data Warehouses	C	15	30	3
Haskell Programming Language	C	15	30	3
Interactive Computer Graphics	C	15	30	3
IT systems utility	E	15	30	3
Real Time Graphics	C	15	30	3
Systems modelling and analysis	E	15	30	3
Test Automation in Agile Development	C	15	30	3
Tools supporting software development	C	15	30	3

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)

Plan studiów zatwierdzony przez Radę Wydziału w dniu 18.06.2015 r.

Otrzymują:

1. Dział Kształcenia
2. Wydział Informatyki i Nauki o Materiałach
3. Dziekanat

.....
(pieczęć i podpis Dyrektora Instytutu)

.....
(pieczęć i podpis Dziekana)