

Faculty of Computer Science and Material Science
Discipline: Computer Science

three-and-half-year engineer's studies
 full-time studies
 valid for academic year **2013/2014**

A GENERAL COURSES

No.	Course name	E/C	Total	incl.					Total ECTS	I year			II year			III year			IV year																
				Lectures	Class ex.	Laborat.	Conver.	semin.		em. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			sem. 5 15 weeks			sem. 6 15 weeks			sem. 7 15 weeks							
										Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS		
1	Logic for informatics	C	50	20	30				5	20	30	5																							
2	Mathematical analysis	E	50	20	30				4	20	30	4																							
3	Probability calculus and statistics	E	50	20	30				4						20	30	4																		
4	Numerical methods	C	50	20		30			4				20	30	4																				
5	Algebra	E	50	20	30				4				20	30	4																				
6	Discrete mathematics	E	50	20	30				4								20	30	4																
7	Basics of digital technics	E	50	20		30			5				20	30	5																				
8	Physics	E	50	20	30				4	20	30	4																							
Total A:				400	160	180	60	0	0	34	60	90	13	60	90	13	20	30	4	20	30	4	0	0	0	0	0	0	0	0	0	0	0	0	

B PROFESSIONAL COURSES

No	Course name	E/ C	Total	incl.					Total ECTS	I year			II year			III year			IV year																
				Lectures	Class ex.	Laborat.	Conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			sem. 5 15 weeks			sem. 6 15 weeks			sem. 7 15 weeks							
										Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS					
9	Computer graphics	C	60	30		30			5				30	30	5																				
10	Computer architecture	E	60	30		30			4							30	30	4																	
11	Computer networks and teletransmission of data	E	60	30		30			5									30	30	5															
12	Introduction to computer science	E	60	30		30			5	30	30	5																							
13	Fundamentals of programming	C	45	15		30			5	15	30	5																							
14	Programming languages	E	60	30		30			5	30	30	5																							
15	Object-oriented and graphical programming lang.	E	60	30		30			5				30	30	5																				
16	Algorithms and data structures	E	60	30		30			4							30	30	4																	
17	Operating systems	E	60	30		30			4							30	30	4																	
18	Systems of information retrieval	E	60	30		30			4							30	30	4																	
19	Data bases	E	60	30		30			5				30	30	5																				
20	Expert systems	E	60	30		30			5									30	30	5															
21	Basics of software engineering	E	60	30		30			3							30	30	3																	
22	Basics of computer system design	E	60	30		30			4												30	30	4												
23	Embedded systems	E	60	30		30			3							30	30	3																	
24	Facultative courses		330	150		180			28												30	30	5	60	60	12	30	60	6	30	30	5			
25	Courses to choose		270	90		180			32												15	30	6	30	60	10	30	60	10	15	30	6			
26	Monographic lecture	C	30	30					5																	30									
27	Social and professional problems of computer specialists	C	30	15	15				2							15	15	2																	
Total B:			1545	720	15	810	0	0	133	75	90	15	90	90	15	165	165	21	135	150	24	120	150	26	90	120	21	45	60	11					

Faculty of Computer Science and Material Science
 Discipline: Computer Science
 Specialty: Video game developer

three-and-half-year engineer's studies
 full-time studies
 valid for academic year 2013/2014

A GENERAL COURSES		E/C	Total	incl.					Total ECTS	I year			II year			III year			IV year																								
				Lectures	Class ex.	Laborat.	Conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			sem. 5 15 weeks			sem. 6 15 weeks			sem. 7 15 weeks															
										Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS													
1	Logic for informatics	C	50	20	30				5	20	30	5																															
2	Mathematical analysis	E	50	20	30				4	20	30	4																															
3	Probability calculus and statistics	E	50	20	30				4							20	30	4																									
4	Numerical methods	C	50	20		30			4				20	30	4																												
5	Algebra	E	50	20	30				4				20	30	4																												
6	Discrete mathematics	E	50	20	30				4							20	30	4																									
7	Basics of digital technics	E	50	20		30			5				20	30	5																												
8	Physics	E	50	20	30				4	20	30	4																															
Total A:			400	160	180	60	0	0	34	60	90	13	60	90	13	20	30	4	20	30	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

B PROFESSIONAL COURSES

No	Course name	E/ C	Total	incl.					Total ECTS	I year			II year			III year			IV year																		
				Lectures	Class ex.	Laborat.	Conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			sem. 5 15 weeks			sem. 6 15 weeks			sem. 7 15 weeks									
										Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS							
9	Computer graphics	C	60	30		30			5				30	30	5																						
10	Computer architecture	E	60	30		30			4							30	30	4																			
11	Computer networks and teletransmission of data	E	60	30		30			5									30	30	5																	
12	Introduction to computer science	E	60	30		30			5	30	30	5																									
13	Fundamentals of programming	C	45	15		30			5	15	30	5																									
14	Programming languages	E	60	30		30			5	30	30	5																									
15	Object-oriented and graphical programming lang.	E	60	30		30			5				30	30	5																						
16	Algorithms and data structures	E	60	30		30			4						30	30	4																				
17	Operating systems	E	60	30		30			4						30	30	4																				
18	Databases	E	60	30		30			5				30	30	5																						
19	Embedded systems	E	60	30		30			4								30	30	4																		
20	Social and professional problems of computer specialists	C	30	15	15				2						15	15	2																				
21	Introduction to games programming	C	45	15		30			5						15	30	5																				
22	Scripting programming languages	C	30	15		15			4						15	15	4																				
23	Level design	E	45	15		30			4								15	30	4																		
24	Programming patterns	C	30	0		30			3									30	3																		
25	Visual game programming	E	45	15		30			4								15	30	4																		
26	Fundamentals of physics in computer games	C	45	15		30			4								15	30	4																		
27	Animation programming	C	45	15		30			4									15	30	4																	
28	Creating a game virtual world	E	45	15		30			4									15	30	4																	
29	Fundamentals of artificial intelligence and expert systems	E	45	30		15			4									30	15	4																	

30	Fundamentals of 3D engine programming	C	60	30		30			4										30	30	4									
31	Swarm intelligent systems	C	30	15		15			3										15	15	3									
32	Introduction to game theory	C	30	15		15			3										15	15	3									
33	Introduction to shaders	E	45	15		30			4										15	30	4									
34	Designing and game managing	C	45	30		15			4													30	15	4						
35	Physical processes simulation	C	45	15		30			4													15	30	4						
36	Introduction to HDR technology	E	45	15		30			4													15	30	4						
37	Programming in DirectX library	E	45	15		30			4													15	30	4						
38	3D modeling	C	30	0		30			4														30	4						
39	Team project	C	30	0		30			4														30	4						
40	Interaction design in 3D engine	C	45	15		30			3																15	30	3			
41	Game creation in network space	C	45	15		30			3																15	30	3			
Total B:			1545	645	15	885	0	0	133	75	90	15	90	90	15	135	150	23	105	180	24	135	165	26	75	165	24	30	60	6

C OTHER

No.	Course name	E/ C	Total	incl.					Total ECTS	I year			II year			III year			IV year																				
				Lecture s	Class ex.	Laborat.	Conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			sem. 5 15 weeks			sem. 6 15 weeks			sem. 7 15 weeks											
										Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS	Lect.	Class ex.	ECTS						
42	Industrial safety regulations and ergonomics	C	5	5					0	5																													
43	English language I	C	30				30		2		30	2																											
44	English language II	C	30				30		2				30	2																									
45	English language III	C	30				30		2					30	2																								
46	English language IV	E	30				30		2							30	2																						
47	Physical exercises	C	30		30				1						30	1																							
48	Diploma seminar I	C	15					15	4											15	4																		
49	Diploma seminar II	C	15					15	5												15	3																	
50	Diploma seminar III diploma thesis preparation	C	30					30	15																		30	20											
51	Diploma Laboratory I	C	30					30	4												30	3																	
52	Diploma Laboratory II	C	30					30	4																	30	4												
Total C:			275	5	30	0	120	120	43	5	30	2	0	30	2	0	60	3	0	30	2	0	15	4	0	45	6	0	60	24									
Total sem.Y (A+B+C)			2220	810	225	945	120	120	210	350	30	360	30	395	30	365	30	315	30	285	30	150	30																
Total annually									710					760					600					150															
TOTAL									2 220																														
Practical training - 4 weeks after 4 sem.																							4 we																

Faculty of Computer Science and material Science
Discipline: Computer Science

two-year master's studies
 full-time studies
 valid for academic year **2013/2014**

B PROFESSIONAL COURSES

No.	Course name	E/C	Total	incl.					Total ECTS	I year						II year							
				lectures	class.ex.	laborat.	conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks				
										lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS		
1	System modeling and analysis	E	50	20		30			6	20	30	6											
2	Analysis of algorithms and their numerical complexity	C	60	30		30			5				30	30	5								
3	Object-oriented programming	E	60	30		30			6	30	30	6											
4	Image processing	C	50	20		30			6	20	30	6											
5	Programmable control	C	45	15		30			5	15	30	5											
6	Network resources - management and protection	C	45	30		15			5				30	15	5								
7	Personal data protection	C	30	15	15				4				15	15	4								
8	Modern Internet applications	E	50	20		30			6	20	30	6											
9	Monographic lecture I	C	20	20					4				20		4								
9	Monographic lecture II	C	20	20					4							20		4					
9	Monographic lecture III	C	20	20					4										20			4	
10	Facultative courses		360	180		180			30				90	90	10	60	60	15	30	30		5	
Total B:			810	420	15	375	0	0	85	105	150	29	185	150	28	80	60	19	50	30		9	

C OTHER

No.	Course name	E/C	Total	incl.					Total ECTS	I year						II year								
				lectures	class.ex.	laborat.	conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks					
										lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS			
11	Physical exercises	C	30		30				1		30	1												
12	Master's laboratory I	C	30			30			5								30	5						
13	Master's laboratory II	C	30			30			5												30	5		
14	Master's seminar I	C	15					15	2					15	2									
15	Master's seminar II	C	30					30	6							30	6							
16	Master's seminar III master's thesis preparation	C	45					45	16												45	16		
Total C:			180		30	60		90	35	0	30	1	0	15	2	0	60	11	0	75	21			
Total sem. (B+C)			990	420	45	435		90	120	285	30	350	30	200	30	155	30							
Total annually									635						355									
TOTAL									990															

Faculty of Computer Science and material Science
Discipline: Computer Science
Specialty: Bioinformatics

two-year master's studies

full-time studies

valid for academic year **2013/2014**

B PROFESSIONAL COURSES

No.	Course name	E/C	Total	incl.					Total ECTS	I year			II year								
				lectures	class.ex.	laborat.	conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks		
										lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS
1	Object-oriented programming	E	60	30		30			6	30	30	6									
2	Programmable control	C	45	15		30			5	15	30	5									
3	Modern Internet applications	E	50	20		30			5	20	30	5									
4	System modeling and analysis	E	50	20		30			6	20	30	6									
5	Analysis of algorithms and their numerical complexity	C	60	30		30			5				30	30	5						
6	Network resources - management and protection	C	45	30		15			4				30	15	5						
7	Personal data protection	C	30	15	15				4				15	15	4						
8	Monographic lecture I	C	20	20					4				20		4						
9	Monographic lecture II	C	20	20					4							20		4			
10	Monographic lecture III	C	20	20					4										20		4
11	Image processing	C	50	20		30			6	20	30	6									

12	Basics of molecular biology and genetics	E	60	45		15			4				45	15	4						
13	Methods and technics of molecular biotechnology	E	30	15		15			2				15	15	2						
14	Script languages	E	60	15		45			4				15	45	4						
15	Graphic elements and 3D modeling	C	45	15		30			3							15	30		3		
16	Introduction to bioinformatics	E	45	15		30			3							15	30		3		
17	Bioinformatics databases	C	15	0		15			2								15		2		
18	Specialist computer software	C	30	0		30			3								30		3		
19	Basics of biostatistics with elements of data mining	E	30	15		15			3							15	15		3		
20	Specialist project I	C	15	0			15		1								15		1		
21	Specialist project II	C	30	0			30		5											30	5
Total B:			810	360	15	390	45	0	85	105	150	29	170	135	28	65	135	19	20	30	9

C OTHER										I year			II year								
No.	Course name	E/C	Total	incl.					Total ECTS	sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks		
				lectures	class.ex.	laborat.	conver.	semin.		lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS
22	Physical exercises	C	30		30				1		30	1									
23	Master's laboratory I	C	30			30			5							30	5				
24	Master's laboratory II	C	30			30			5										30	5	
25	Master's seminar I	C	15					15	2					15	2						
26	Master's seminar II	C	30					30	6							30	6				
27	Master's seminar III master's thesis preparation	C	45					45	16										45	16	
Total C:			180		30	60		90	35	0	30	1	0	15	2	0	60	11	0	75	21
Total sem. (B+C)			990	360	45	450	45	90	120	285	30	320	30	260	30	125	30				
Total annually										605			385								
TOTAL										990											

Faculty of Computer Science and material Science
Discipline: Computer Science
Specialty: Data analyzer

two-year master's studies

full-time studies

valid for academic year **2013/2014**

B PROFESSIONAL COURSES

No.	Course name	E/C	Total	incl.					Total ECTS	I year						II year						
				lectures	class.ex.	laborat.	conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks			
										lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	
1	System modeling and analysis	E	50	20		30			6	20	30	6										
2	Analysis of algorithms and their numerical complexity	C	60	30		30			5				30	30	5							
3	Object-oriented programming	E	60	30		30			6	30	30	6										
4	Image processing	C	50	20		30			6	20	30	6										
5	Programmable control	C	45	15		30			5	15	30	5										
6	Network resources - management and protection	C	45	30		15			5				30	15	5							
7	Personal data protection	C	30	15	15				4				15	15	4							
8	Modern Internet applications	E	50	20		30			6	20	30	6										
9	Monographic lecture I, II, III	C	60	60					12				20		4	20		4	20			4
10	Statistical methods of data analysis	E	60	30		30			5				30	30	5							
11	Databases systems	E	60	30		30			5				30	30	5							
12	Machine learning	E	60	30		30			5							30	30	5				
13	Methods and technics of objects classification	E	60	30		30			5							30	30	5				
14	Advanced data analysis systems	C	45	15		30			5							15	30	5				
15	Specialization project	C	45	0		45			5											45		5
Total B:			780	375	15	390	0	0	85	105	150	29	155	120	28	95	90	19	20	45	9	

C OTHER										I year						II year							
No.	Course name	E/C	Total	incl.					Total ECTS	sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks				
				lectures	class.ex.	laborat.	conver.	semin.		lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS		
16	Physical exercises	C	30		30				1		30	1											
17	Master's laboratory I	C	30			30			5							30	5						
18	Master's laboratory II	C	30			30			5											30	5		
19	Master's seminar I	C	15					15	2					15	2								
20	Master's seminar II	C	30					30	6							30	6						
21	Master's seminar III master's thesis preparation	C	45					45	16											45	16		
Total C:			180		30	60		90	35	0	30	1	0	15	2	0	60	11	0	75	21		
Total sem. (B+C)			960	375	45	450		90	120	285	30	290	30	245	30	140	30						
Total annually										575						385							
TOTAL										960													

Faculty of Computer Science and material Science
 Discipline: Computer Science
 Specialty: Modeling and Visualization in Bioinformatics

two-year master's studies
 full-time studies
 valid for academic year 2013/2014

B PROFESSIONAL COURSES

No.	Course name	E/C	Total	incl.					Total ECTS	I year						II year									
				lectures	class.ex.	laborat.	conver.	semin.		sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks						
										lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS				
1	Object-oriented programming	E	75	30		45			6	30	45	6													
2	Algorithms and complexity theory	C	45	15		30			5				15	30	5										
3	Basic of modeling and visualization	E	45	15		30			6				15	30	6										
4	Data security	C	45	15		30			5	15	30	5													
5	Introduction to Bioinformatics	E	45				45		6					15	2		30	4							
6	Project management	C	30				30		3												30	3			
7	Web technologies	E	45	15		30			6	15	30	6													
8	Artificial Intelligence	E	45	15			30		6				15	30	6										
9	Monographic lecture I, II	C	30	30					3							15		2		15			1		
10	Mathematical methods in Bioinformatics	C	45	15			30		6	15	30	6													
11	Introduction to molecular biology and genetic	E	60	15			45		6	15	45	6													
12	Databases and data warehouse	E	45	15		30			6				15	30	6										
13	Mathematical and digital modeling	C	45	15		30			4				15	30	4										

14	Methods of data analysis	E	45	15		30			6						15	30	6				
15	Multiresolution image analysis	E	60	15		45			7						15	45	7				
16	Specialization project I, II	C	60			60			6							30	3		30	3	
Total B:			765	225	0	360	180	0	87	90	180	29	75	165	29	45	135	22	15	60	7

C OTHER										I year						II year							
No.	Course name	E/C	Total	incl.					Total ECTS	sem. 1 15 weeks			sem. 2 15 weeks			sem. 3 15 weeks			sem. 4 15 weeks				
				lectures	class.ex.	laborat.	conver.	semin.		lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS	lect.	class.ex.	ECTS		
				16	Physical exercises	C	30			30				1		30	1						
17	English Language Course I, II	C	45				45		3							15	1		30	2			
18	Master's laboratory I	C	30			30			3							30	3						
19	Master's laboratory II	C	30			30			3									30	3				
20	Master's seminar I	C	15					15	1				15	1									
21	Master's seminar II	C	30					30	4							30	4						
22	Master's seminar III master's thesis preparation	C	45					45	18										45	18			
Total C:			225		30	60	45	90	33	0	30	1	0	15	2	0	60	11	0	75	21		
Total sem. (B+C)			990	225	30	420	225	90	120	300	30	255	30	255	30	180	30						
Total annually										555						435							
TOTAL										990													

