INFORMATION SCIENCES, speciality Designing IT Systems and Computer Networks

Educational profile: general academic
Form of studies: part-time 2017/18
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science and technological sciences

No.	Name of subject/ module	sem.	ECTS	exam in sem.	Hours in semester									
					lect.	exerc.	lab.	others	self-study	lect.+exer	contact	practical	together	status
	General requirements													
1	Ergonomics	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
2	Intellectual property protection	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
3	Etiquette	**1**	0,5	zal.	**4**			0	6	4	4	0	10	o
4	Safety and hygiene at work	**1**	0,5	zal.	**4**			4	6	4	8	0	14	o
5	Patent information	**4**	0,5	zal.	**4**			4	6	4	8	0	14	o
6	Humanity and sociology course 1	**1**	2	zal_O	**16**			1	40	16	17	0	57	f
7	Humanity and sociology course 2	**3**	2	zal_O	**16**			1	40	16	17	0	57	f
8	Specialized workshop of computer science English	**1**	2	zal_O		**30**		1	30	30	31	30	61	o
	Subjects for field of study													
1	Diffuse systems	**1**	4,5	Egz.	**20**		**20**	3	83	40	43	30	126	o
2	Subject to be choosen 1	**1**	4,5	Egz.	**20**		**20**	2	83	40	42	30	125	f
2a	Logic for informaticians^													
2b	Foundations of calculability theory ^													
3	Computer simulation	**2**	5	zal_O	**20**		**20**	3	85	40	43	30	128	o
4	History of computer science	**2**	1	zal_O	**10**			0	20	10	10	0	30	o
5	Data security	**3**	4,5	zal_O	**20**		**20**	3	75	40	43	30	118	o
6	Systems of artificial intelligence	**4**	5	Egz.	**20**		**20**	5	80	40	45	30	125	o
7	Quantum algorithms	**4**	2,5	zal_O	**20**			5	45	20	25	0	70	o
	Subjects for speciality													
1	Advanced obiect-oriented programming	**1**	4,5	zal_O	**20**		**20**	3	80	40	43	30	123	o
2	Mathematical modeling of systems	**1**	4,5	Egz.	**20**		**20**	5	80	40	45	30	125	o

3	Bolean algebra	**1**	4,5	Egz.	**20**		**20**	5	80	40	45	30	125	o
4	Foundations of management information systems	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
5	Subject to be choosen 2	**2**	5	Egz.	**20**		**20**	5	85	40	45	30	130	f
	Facultative subject^^													
	Automatics and robotics^^													
	Information theory and coding^^													
6	Computer system design	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
7	Computer network design	**3**	5	Egz.	**20**		**20**	5	85	40	45	30	130	o
8	Subject to be choosen 3	**3**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	f
	Advanced computer networks^^^													
	Mobil systems^^^													
9	Advanced Internet applications	**3**	5	Egz.	**20**		**20**	5	85	40	45	30	130	o
10	Subject to be choosen 4	**3**	5	Egz.	**20**		**20**	5	80	40	45	30	125	f
	Advances data bases systems^^^^													
	R programming^^^^													
	Object oriented data bases^^^^													
	Specialising													
1	Seminar for the master's degree 1	**1**	2	zal_O			**20**	5	30	20	25	30	55	f
2	Seminar for the master's degree 2	**2**	2	zal_O			**20**	5	30	20	25	30	55	f
3	Specialized lecture 1	**2**	2	zal_O	**20**			3	30	20	23	0	53	f
4	Seminar for the master's degree 3	**3**	2	zal_O			**20**	5	30	20	25	30	55	f
5	Specialized lecture 2	**3**	2	zal_O	**20**			3	30	20	23	0	53	f
6	Seminar for the master's degree 4	**4**	2	zal_O			**20**	5	30	20	25	30	55	f
	Others													
1	Professional practice	**2**	6	zal_O				52	108	0	52	160	160	f
2	Diploma Thesis	**4**	20					200	300	0	200	200	500	f

Together:		ECTS	l.egz.	wyk.	kon.	lab.	inne	samodz.	w+ćw	kontakt.	prakt	razem	
semester 1	**1**	**30**	**4**	128	30	120	29	524	278	307	210	831	
semester 2	**2**	**30**	**3**	110	0	100	74	518	210	284	310	802	
semester 3	**3**	**30**	**4**	136	0	120	30	505	256	286	180	791	
semester 4	**4**	**30**	**1**	44	0	40	219	461	84	303	260	764	
Number of exams/ ECTS		**120**	**12**	**418**	**30**	**380**	**352**	**2008**	**828**	**1180**	**960**	**3188**	

I	ECTS: summary	ECTS		Hours	
			%		%
	Together in plan of studies	120	100%	3188	100%
1	requiring the direct contact with an academic teacher*	44,4	37,0%	1180	37,0%
2	in basic sciences	27	22,5%	722	22,6%
3	of practical nature (laboratories, projects, workshops)	36,1	30,1%	960	30,1%
4	general academic to be realized with another field of study	8	6,7%	223	7,0%
5	Humanity and social subjects	5	4,2%	144	4,5%
6	subjects to be chosen - at least 30% of ECTS	61	50,8%	1603	50,3%
7	Professional practice	6	5,0%	160	5,0%

II	Percentage of ECTS for each field of study in ECTS	%
	field of study	
1	technological sciences	92,4%
2	science	7,6%
	Together % of ECTS	

Note: applies to graduates of first and second degree of related fields of studies

in order to apply for second degree studies the student has to posses the diplomma of the first degree studies or second degree master studies along with having a title of engineer or matser in engineering

After admission for the second degree studies, a student of relational field of studies is obliged to complete all lacking educational effects in category of knowlegde, skills and social competences required for the first degree studies. It is possible to complete additional subjects up to 30 ECTS with the first degree students. The student obliged to complete his/her knowledge, abilities and social competences may realize them through individual organization of studies. Possible program differences the student should realize during four semesters of studies.

Necessary educational effects:

in the category of knowledge

has knowledge in certain fields of mathematics, including elements of algebra and geometry, analysis, probability and elements of discrete and applied mathematics

has knowledge of physics necessary for understanding the fundamental physical phenomena occurring in electronic and IT elements and systems

has knowledge concerning programming paradigms, in particular methods of structural, object-oriented and declarative programming

has fundamental knowledge of the system architecture and computer networks as well as operating systems

knows and understands the basics of designing, creating and managing database systems

in the category of skills
can design and justify the validity of the computer program, taking into account the complexity of algorithms and present it in a high-level language
can use properly chosen development environments for designing, creating, modifying and managing databases
can make specification of requirements and design elements of information systems, taking into account the given commercial and economic criteria

in the category of social competences
is aware of the importance and understands the non-technical aspects and effects of his/her activities as an engineer/ computer scientist, his/her impact on environment, and related responsibility for decisions taken
can cooperate and work in a group, taking different roles, is aware of responsability for his/her work and rules in a group

INFORMATION SCIENCES, speciality Multimedia Techniques

Educational profile: general academic
Form of studies: part-time
Level of qualification: second degree studies 2017/18
Qualifications gained: second degree studies
Area of education: in science and technological sciences

No.	Name of subject/ module	sem.	ECTS	exam in sem.	Hours in semester									
					lect.	exerc.	lab.	others	self-study	lect.+exer	contact	practical	together	status
	General requirements													
1	Ergonomics	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
2	Intellectual property protection	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
3	Etiquette	**1**	0,5	zal.	**4**			0	6	4	4	0	10	o
4	Safety and hygiene at work	**1**	0,5	zal.	**4**			4	6	4	8	0	14	o
5	Patent information	**4**	0,5	zal.	**4**			4	6	4	8	0	14	o
6	Humanity and sociology course 1	**1**	2	zal_O	**16**			1	40	16	17	0	57	f
7	Humanity and sociology course 2	**3**	2	zal_O	**16**			1	40	16	17	0	57	f
8	Specialized workshop of computer science English	**1**	2	zal_O		**30**		1	30	30	31	30	61	o
	Subjects for field of study													
1	Diffuse systems	**1**	4,5	Egz.	**20**		**20**	3	83	40	43	30	126	o
2	Subject to be choosen 1	**1**	4,5	Egz.	**20**		**20**	2	83	40	42	30	125	f
	Logic for informaticians^													
	Foundations of calculability theory ^													
3	Computer simulation	**2**	5	zal_O	**20**		**20**	3	85	40	43	30	128	o
4	History of computer science	**2**	1	zal_O	**10**			0	20	10	10	0	30	o
5	Data security	**3**	4,5	zal_O	**20**		**20**	3	75	40	43	30	118	o
6	Systems of artificial intelligence	**4**	5	Egz.	**20**		**20**	5	80	40	45	30	125	o
7	Quantum algorithms	**4**	2,5	zal_O	**20**			5	45	20	25	0	70	o
	Subjects for speciality													
1	Modeling and visualization of 3d graphics	**1**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o

2	Advanced graphics programming systems	**1**	4,5	zal_O	**20**		**20**	5	80	40	45	30	125	o
3	Subject to be choosen 2	**1**	4,5	Egz.	**20**		**20**	5	80	40	45	30	125	o
	Mathematical modeling of systems^^													
	Bolean algebra^^													o
4	Digital Signal Processing	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
5	Subject to be choosen 3	**2**	5	Egz.	**20**		**20**	5	85	40	45	30	130	f
5a	Facultative subject^^^													
5b	Data analysis^^^													
5c	Information theory and coding^^^													
6	Image processing and recognition	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
7	Multimedia system techniques	**3**	5	Egz.	**20**		**20**	3	80	40	43	30	123	o
8	Speech signal processing	**3**	5	Egz.	**20**		**20**	5	85	40	45	30	130	o
9	Advanced numerical methods	**3**	5	Egz.	**20**		**20**	5	85	40	45	30	130	o
10	Subject to be choosen 4	**3**	4,5	Egz.	**20**		**20**	5	80	40	45	30	125	f
	Multimedia data bases^^^^													
	R programming^^^^													
	Mobile systems^^^^													
	Specialising													
1	Seminar for the master's degree 1	**1**	2	zal_O			**20**	5	30	20	25	30	55	f
2	Seminar for the master's degree 2	**2**	2	zal_O			**20**	5	30	20	25	30	55	f
3	Specialized lecture 1	**2**	2	zal_O	**20**			3	30	20	23	0	53	f
4	Seminar for the master's degree 3	**3**	2	zal_O			**20**	5	30	20	25	30	55	f
5	Specialized lecture 2	**3**	2	zal_O	**20**			3	30	20	23	0	53	f
6	Seminar for the master's degree 4	**4**	2	zal_O			**20**	5	30	20	25	30	55	f
	Others													
1	Professional practice	**2**	6	zal_O				52	108	0	52	160	160	f
2	Diploma Thesis	**4**	20					200	300	0	200	200	500	f

Together:		ECTS	l.egz.	wyk.	kon.	lab.	inne	samodzieln	w+ćw	kontakt.	prakt	razem

semester 1	**1**	**30**	**4**	128	30	120	29	524	278	307	210	831
semester 2	**2**	**30**	**3**	110	0	100	74	518	210	284	310	802
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semester 4	**4**	**30**	**1**	44	0	40	219	461	84	303	260	764
Number of exams/ ECTS		**120**	**12**	**418**	**30**	**380**	**352**	**2008**	**828**	**1180**	**960**	**3188**

I	**ECTS:** **summary**	**ECTS**		**Hours**	
			%		**%**
	Together in plan of studies	120	100%	3188	100%
1	requiring the direct contact with an academic teacher*	44,4	37,0%	1180	37,0%
2	in basic sciences	27	22,5%	722	22,6%
3	of practical nature (laboratories, projects, workshops)	36,1	30,1%	960	30,1%
4	general academic to be realized with another field of study	8	6,7%	223	7,0%
5	Humanity and social subjects	5	4,2%	144	4,5%
6	subjects to be chosen - at least 30% of ECTS	56	46,7%	1480	46,4%
7	Professional practice	6	5,0%	160	5,0%

II	**Percentage of ECTS for each field of study in ECTS**	%
	field of study	
1	technological sciences	**92,1%**
2	science	**7,9%**
	Together % of ECTS	

Note: applies to graduates of first and second degree of related fields of studies

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Necessary educational effects:

in the category of knowledge

has knowledge in certain fields of mathematics, including elements of algebra and geometry, analysis, probability and elements of discrete and applied mathematics
has knowledge of physics necessary for understanding the fundamental physical phenomena occurring in electronic and IT elements and systems
has knowledge concerning programming paradigms, in particular methods of structural, object-oriented and declarative programming
has fundamental knowledge of the system architecture and computer networks as well as operating systems
knows and understands the basics of designing, creating and managing database systems

in the category of skills
can design and justify the validity of the computer program, taking into account the complexity of algorithms and present it in a high-level language
can use properly chosen development environments for designing, creating, modifying and managing databases
can make specification of requirements and design elements of information systems, taking into account the given commercial and economic criteria

in the category of social competences
is aware of the importance and understands the non-technical aspects and effects of his/her activities as an engineer/ computer scientist, his/her impact on environment, and related responsibility for decisions taken
can cooperate and work in a group, taking different roles, is aware of responsability for his/her work and rules in a group

INFORMATION SCIENCES, speciality: Bioinformatics

Educational profile: general academic od 2017/18
Form of studies: part-time
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science and technological sciences

No.	Name of subject/ module	sem.	ECTS	exam in sem.	Hours in semester									
					lect.	exerc.	lab.	others	self-study	lect.+exer	contact	practical	together	status
	General requirements													
1	Ergonomics	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
2	Intellectual property protection	**1**	0,25	zal.	**2**			0	3	2	2	0	5	o
3	Etiquette	**1**	0,5	zal.	**4**			0	6	4	4	0	10	o
4	Safety and hygiene at work	**1**	0,5	zal.	**4**			4	6	4	8	0	14	o
5	Patent information	**4**	0,5	zal.	**4**			4	6	4	8	0	14	o
6	Humanity and sociology course 1	**1**	2	zal_O	**16**			1	40	16	17	0	57	f
8	Specialized workshop of computer science English	**1**	2	zal_O		**30**		1	30	30	31	30	61	o
	Subjects for field of study													
1	Diffuse systems	**1**	4,5	Egz.	**20**		**20**	3	83	40	43	30	126	o
2	Subject to be choosen 1	**1**	4,5	Egz.	**20**		**20**	2	83	40	42	30	125	f
	Logic for informaticians^													
	Foundations of calculability theory ^													
3	Computer simulation	**2**	5	zal_O	**20**		**20**	3	85	40	43	30	128	o
4	History of computer science	**2**	1	zal_O	**10**			0	20	10	10	0	30	o
5	Data security	**3**	4,5	zal_O	**20**		**20**	3	75	40	43	30	118	o
6	Systems of artificial intelligence	**4**	5	Egz.	**20**		**20**	5	80	40	45	30	125	o
7	Quantum algorithms	**4**	2,5	zal_O	**20**			5	45	20	25	0	70	o
	Subjects for speciality													
1	Molecular biophisics	**1**	4,5	Egz.	**20**		**20**	3	70	40	43	30	113	o

2	Application of computer tools in biology	**1**	3	zal_O	**10**		**20**	1	45	30	31	30	76	o
3	Introduction to molecular biology	**1**	3	Egz.	**10**		**20**	1	46	30	31	30	77	o
4	Methodology of experimental work	**1**	3	zal_O	**10**		**20**	1	55	30	31	30	86	o
5	Systems biology	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
4	Introduction to molecular modelling	**2**	5	Egz.	**20**		**20**	3	100	40	43	30	143	o
5	Image processing and recognition	**2**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
6	Advanced techniques of molecular biology	**3**	5	Egz.	**20**		**20**	3	90	40	43	30	133	o
7	Stuctural bioinformatics	**3**	5	Egz.	**20**		**20**	4	90	40	44	30	134	o
8	Bid Data analysis	**3**	4,5	Egz.	**20**		**20**	3	80	40	43	30	123	o
9	Research project	**3**	2	zal_O			**16**	2	40	16	18	30	58	o
10	Subject to be choosen 4	**3**	5	Egz.	**20**		**20**	5	80	40	45	30	125	f
	Advances data bases systems^^^^													
	R programming^^^^													
	Object oriented data bases^^^^													
	Specialising													
1	Seminar for the master's degree 1	**1**	2	zal_O			**20**	5	30	20	25	30	55	f
2	Seminar for the master's degree 2	**2**	2	zal_O			**20**	5	30	20	25	30	55	f
3	Specialized lecture 1	**2**	2	zal_O	**20**			3	30	20	23	0	53	f
4	Seminar for the master's degree 3	**3**	2	zal_O			**20**	5	30	20	25	30	55	f
5	Specialized lecture 2	**3**	2	zal_O	**20**			3	30	20	23	0	53	f
6	Seminar for the master's degree 4	**4**	2	zal_O			**20**	5	30	20	25	30	55	f
	Others													
1	Professional practice	**2**	6	zal_O				52	108	0	52	160	160	f
2	Diploma Thesis	**4**	20					200	300	0	200	200	500	f

	Together:		ECTS	l.egz.	wyk.	kon.	lab.	inne	samodzieln	w+ćw	kontakt.	prakt	razem
	semester 1	**1**	**30**	**4**	118	30	140	22	500	288	310	240	810
	semester 2	**2**	**30**	**3**	110	0	100	72	533	210	282	310	815
	semester 3	**3**	**30**	**4**	120	0	136	28	515	256	284	210	799
	semester 4	**4**	**30**	**1**	44	0	40	219	461	84	303	260	764
	Number of exams/ ECTS		**120**	**12**	**392**	**30**	**416**	**341**	**2009**	**838**	**1179**	**1020**	**3188**

I	**ECTS:**	**ECTS**		**Hours**			**II**	**Percentage of ECTS**	
	summary		%		**%**			**for each field of study**	%

	Together in plan of studies	120	100%	3188	100%
1	requiring the direct contact with an academic teacher*	44,4	37,0%	1179	37,0%
2	in basic sciences	27	22,5%	722	22,6%
3	of practical nature (laboratories, projects, workshops)	38,4	32,0%	1020	32,0%
4	general academic to be realized with another field of study	6	5,0%	166	5,2%
5	Humanity and social subjects	5	4,2%	145	4,5%
6	subjects to be chosen - at least 30% of ECTS	49,5	41,3%	1293	40,6%
7	Professional practice	6	5,0%	160	5,0%

	in ECTS	
	field of study	
1	technological sciences	**94,5%**
2	science	**5,5%**
	Together % of ECTS	

Note: applies to graduates of first and second degree of related fields of studies

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in the category of skills

can design and justify the validity of the computer program, taking into account the complexity of algorithms and present it in a high-level language

can use properly chosen development environments for designing, creating, modifying and managing databases
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can cooperate and work in a group, taking different roles, is aware of responsability for his/her work and rules in a group

INFORMATION SCIENCES, speciality Designing IT Systems and Computer Networks

Educational profile: general academic
Form of studies: part-time 2017/18
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science and technological sciences

	Semester 1	ECTS		lect.	exerc.	lab.
1	Ergonomics	0,25	zal.	**2**		
2	Intellectual property protection	0,25	zal.	**2**		
3	Etiquette	0,5	zal.	**4**		
4	Safety and hygiene at work	0,5	zal.	**4**		
5	Humanity and sociology course 1	2	zal_O	**16**		
6	Specialized workshop of computer science English	2	zal_O		**30**	
7	Diffuse systems	4,5	Egz.	**20**		**20**
8	Subject to be choosen 1	4,5	Egz.	**20**		**20**
	Logic for informaticians^					
	Foundations of calculability theory ^					
9	Advanced obiect-oriented programming	4,5	zal_O	**20**		**20**
10	Mathematical modeling of systems	4,5	Egz.	**20**		**20**
11	Bolean algebra	4,5	Egz.	**20**		**20**
12	Seminar for the master's degree 1	2	zal_O			**20**

	Semester 2	ECTS		lect.	exerc.	lab.
1	History of computer science	1	zal_O	**10**		
2	Computer simulation	5	zal_O	**20**		**20**
3	Foundations of management information systems	4,5	Egz.	**20**		**20**
4	Subject to be choosen 2	5	Egz.	**20**		**20**
	Facultative subject^^					
	Automatics and robotics^^					
	Information theory and coding^^					
5	Computer system design	4,5	Egz.	**20**		**20**
6	Seminar for the master's degree 2	2	zal_O			**20**
7	Specialized lecture 1	2	zal_O	**20**		
8	Professional practice	6	zal_O			

	Semester 3	ECTS		lect.	exerc.	lab.
1	Humanity and sociology course 2	2	zal_O	**16**		
2	Data security	4,5	zal_O	**20**		**20**
3	Computer network design	5	Egz.	**20**		**20**
4	Subject to be choosen 3	4,5	Egz.	**20**		**20**
	Advanced computer networks^^^					
	Mobil systems^^^					
5	Advanced Internet applications	5	Egz.	**20**		**20**
6	Subject to be choosen 4	5	Egz.	**20**		**20**
	Advances data bases systems^^^^					
	R programming^^^^					
	Object oriented data bases^^^^					
7	Seminar for the master's degree 3	2	zal_O			**20**
8	Specialized lecture 2	2	zal_O	**20**		

	Semester 4	ECTS		lect.	exerc.	lab.
1	Patent information	0,5	zal.	**4**		
2	Systems of artificial intelligence	5	Egz.	**20**		**20**
3	Quantum algorithms	2,5	zal_O	**20**		
4	Seminar for the master's degree 4	2	zal_O			**20**
5	Diploma Thesis	20				

INFORMATION SCIENCES, speciality: Multimedia Techniques

Educational profile: general academic
Form of studies: part-time 2017/18
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science and technological sciences

	Semester 1	ECTS		lect.	exerc.	lab.
1	Ergonomics	0,25	zal.	**2**		
2	Intellectual property protection	0,25	zal.	**2**		
3	Etiquette	0,5	zal.	**4**		
4	Safety and hygiene at work	0,5	zal.	**4**		
5	Humanity and sociology course 1	2	zal_O	**16**		
6	Specialized workshop of computer science English	2	zal_O		**30**	
7	Diffuse systems	4,5	Egz.	**20**		**20**
8	Subject to be choosen 1	4,5	Egz.	**20**		**20**
	Logic for informaticians^					
	Foundations of calculability theory ^					
9	Modeling and visualization of 3d graphics	4,5	Egz.	**20**		**20**
10	Advanced graphics programming systems	4,5	zal_O	**20**		**20**
11	Subject to be choosen 2	4,5	Egz.	**20**		**20**
	Mathematical modeling of systems^^					
	Bolean algebra^^					
12	Seminar for the master's degree 1	2	zal_O			**20**

	Semester 2	ECTS		lect.	exerc.	lab.
1	History of computer science	1	zal_O	**10**		
2	Computer simulation	5	zal_O	**20**		**20**
3	Digital Signal Processing	4,5	Egz.	**20**		**20**
4	Subject to be choosen 3	5	Egz.	**20**		**20**
	Facultative subject^^^					
	Data analysis^^^					
	Information theory and coding^^^					
5	Image processing and recognition	4,5	Egz.	**20**		**20**
6	Seminar for the master's degree 2	2	zal_O			**20**
7	Specialized lecture 1	2	zal_O	**20**		
8	Professional practice	6	zal_O			

	Semester 3	ECTS		lect.	exerc.	lab.
1	Humanity and sociology course 2	2	zal_O	**16**		
2	Data security	4,5	zal_O	**20**		**20**
3	Multimedia system techniques	5	Egz.	**20**		**20**
4	Speech signal processing	5	Egz.	**20**		**20**
5	Advanced numerical methods	5	Egz.	**20**		**20**
6	Subject to be choosen 4	4,5	Egz.	**20**		**20**
	Multimedia data bases^^^^					
	R programming^^^^					
	Mobil systems^^^^					
7	Seminar for the master's degree 3	2	zal_O			**20**
8	Specialized lecture 2	2	zal_O	**20**		

	Semester 4	ECTS		lect.	exerc.	lab.
1	Patent information	0,5	zal.	**4**		
2	Systems of artificial intelligence	5	Egz.	**20**		**20**
3	Quantum algorithms	2,5	zal_O	**20**		
4	Seminar for the master's degree 4	2	zal_O			**20**
5	Diploma Thesis	20				

INFORMATION SCIENCES, speciality: Bioinformatics

Educational profile: general academic 2017/18
Form of studies: part-time
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science and technological sciences

	Semester 1	ECTS		lect.	exerc.	lab.
1	Ergonomics	0,25	zal.	**2**		
2	Intellectual property protection	0,25	zal.	**2**		
3	Etiquette	0,5	zal.	**4**		
4	Safety and hygiene at work	0,5	zal.	**4**		
5	Humanity and sociology course 1	2	zal_O	**16**		
6	Specialized workshop of computer science English	2	zal_O		**30**	
7	Diffuse systems	4,5	Egz.	**20**		**20**
8	Subject to be choosen 1	4,5	Egz.	**20**		**20**
8a	Logic for informaticians^					
8b	Foundations of calculability theory ^					
9	Molecular biophisics	4,5	Egz.	**20**		**20**
10	Application of computer tools in biology	3	zal_O	**10**		**20**
11	Introduction to molecular biology	3	Egz.	**10**		**20**
11	Methodology of experimental work	3	zal_O	**10**		**20**
12	Seminar for the master's degree 1	2	zal_O			**20**

	Semester 2	ECTS		lect.	exerc.	lab.
1	History of computer science	1	zal_O	**10**		
2	Computer simulation	5	zal_O	**20**		**20**
3	Systems biology	4,5	Egz.	**20**		**20**
4	Introduction to molecular modelling	5	Egz.	**20**		**20**
5	Image processing and recognition	4,5	Egz.	**20**		**20**
6	Seminar for the master's degree 2	2	zal_O			**20**
7	Specialized lecture 1	2	zal_O	**20**		
8	Professional practice	6	zal_O			

	Semester 3	ECTS		lect.	exerc.	lab.
1	Data security	4,5	zal_O	**20**		**20**
2	Advanced techniques of molecular biology	5	Egz.	**20**		**20**
3	Stuctural bioinformatics	5	Egz.	**20**		**20**
4	Bid Data analysis	4,5	Egz.	**20**		**20**
5	Research project	2	zal_O			**16**
6	Subject to be choosen 4	5	Egz.	**20**		**20**
	Advances data bases systems^^^^					
	R programming^^^^					
	Object oriented data bases^^^^					
7	Seminar for the master's degree 3	2	zal_O			**20**
8	Specialized lecture 2	2	zal_O	**20**		

	Semester 4	ECTS		lect.	exerc.	lab.
1	Patent information	0,5	zal.	**4**		
2	Systems of artificial intelligence	5	Egz.	**20**		**20**
3	Quantum algorithms	2,5	zal_O	**20**		
4	Seminar for the master's degree 4	2	zal_O			**20**
5	Diploma Thesis	20				