MATHEMATICS, speciality: Applied Mathematics

Educational profile: general academic

Form of studies: full-time 2017/18

Level of qualification: second degree studies

Qualifications gained: second degree studies

Area of education: in science

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	Humanity and sociology course 1	**1**	2	zal_O	**30**			1	30	30	31	0	61	f
6	Humanity and sociology course 2	**3**	2	zal_O	**30**			1	30	30	31	0	61	f
7	Specialized workshop of mathematical English	**1**	2	zal_O		**30**		1	30	30	31	30	61	o
8	Foreign language II. 1	**1**	2	zal_O		**30**		1	30	30	30	30	60	o
9	Foreign language II. 2	**2**	2	zal_O		**30**		1	30	30	30	30	60	o
	Basic subjects													
1	Mathematical analysis II	1	6	Egz.	**45**	**45**		5	65	90	95	45	160	o
2	Complex analysis	1	4	Egz.	**30**	**30**		2	50	60	62	30	112	o
3	Functional analysis	2	4,5	Egz.	**30**	**30**		2	55	60	62	30	117	o
	Subjects for field of study													
1	Algebra II	2	4,5	Egz.	**30**	**30**		2	55	60	62	30	117	o
2	Advanced numerical methods	3	4,5	Egz.	**30**		**30**	3	60	60	63	30	123	o
3	Subject to be choosen 1	3	1	zal_O	**15**			0	15	15	15	0	30	f
	History of mathematics ^^^													

	Polish school of mathematics ^^^													
4	Mathematical logic	4	6	Egz.	**30**	**45**		5	80	75	80	45	160	o
	Subjects for speciality													
1	Differential equations II	1	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
2	Elements of the mathematics of life insurance	1	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
3	Statistical packages	1	2	zal_O			**30**	1	25	30	31	30	56	f
4	Estimation theory	2	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
5	Elements of risk theory	2	4	Egz.	**30**	**30**		2	50	60	62	31	112	f
6	Subject to be choosen 2	**3**	4	zal_O	**30**	**30**		2	50	60	62	32	112	f
	Advanced programming ^													
	Discrete mathematics ^													
7	Subject to be choosen 3	**3**	4	zal_O	**30**	**30**		2	50	60	62	32	112	f
	Operating research II ^^													
	Optimization methods II ^^													
8	Stochastic processes	**3**	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
9	Verification of statistical hypotheses	**3**	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
	Specialising													
1	Specialized lecture 1	1	2,5	zal_O	**30**			5	30	30	35	30	65	f
2	Specialized lecture 2	2	2,5	zal_O	**30**			5	30	30	35	0	65	f
3	Seminar for the master's degree 1	2	2,5	zal_O		**30**		5	30	30	35	30	65	f
4	Specialized lecture 3	3	2,5	zal_O	**30**			5	30	30	35	0	65	f
5	Seminar for the master's degree 2	3	4	zal_O		**45**		5	50	45	50	45	100	f
6	Seminar for the master's degree 3	4	4	zal_O		**45**		5	50	45	50	45	100	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	exams	lec.	exer.	lab.	others	self-study	lec.+ex.	contact.	pract.	others
semester 1	**1**	**30**	**4**	207	195	30	24	378	432	455	255	833
semester 2	**2**	**30**	**4**	150	180	0	71	408	330	400	341	808

semester 3	**3**	**30**	**3**	225	165	30	22	385	420	442	199	827
semester 4	**4**	**30**	**1**	30	90	0	210	430	120	330	290	760
Number of exams/ ECTS		**120**	**12**	**612**	**630**	**60**	**327**	**1601**	**1302**	**1627**	**1085**	**3228**

I	**ECTS:** **summary**	**ECTS**		**Hours**	
			%		**%**
	Together in plan of studies	120	100%	3228	100%
1	requiring the direct contact with an academic teacher*	60,5	50,4%	1627	50,4%
2	in basic sciences	14,5	12,1%	389	12,1%
3	of practical nature (laboratories, projects, workshops)	40,3	33,6%	1085	33,6%
4	general academic to be realized with another field of study	11,5	9,6%	337	10,4%
5	Humanity and social subjects	5	4,2%	152	4,7%
6	subjects to be chosen - at least 30% of ECTS	83	69,2%	2224	68,9%
7	Professional practice	6	5,0%	160	5,0%

II	**Percentage of ECTS for each field of study in ECTS**	%
	field of study	
1	science	**100%**
	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
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

is familiar with the concepts and methods of mathematical logic, set theory and discrete mathematics contained in other disciplines of mathematics

is familiar with the basics of differential and integrable calculus of functions of one or many variables, and also used in other branches of mathematics, with special emphasis on linear algebra and topology

in the category of skills

uses correctly prepositional logic and quantifiers, can correctly use also in a colloquial language
uses the language of set theory while interpreting issues from different areas of mathematics
can define functions, also with the use of limits, and describe their properties
knows how to use the theorems and methods of differential calculus of functions with one or many variables
knows how to interpret and explain functional dependences
uses the notion of vector space, linear transformations, vector, matrix
notes the presence of algebraic structures (groups, rings, vector spaces)
can find matrices of linear transformations in different databases, calculates the eigenvalues and eigenvectors of the matrix
knows how to use a topological property sets and features to solve qualitative tasks
uses the concept of probability space, can build and analyze mathematical model of random experiment
can determine parameters of the distribution of a random variable with discrete and continuous distribution

in the category of social competences

is able to formulate opinions concerning the basic issues of mathematics
can work as a team, understands the need for systematic work in all projects that have a long-term nature

MATHEMATICS, speciality: Teaching Mathematics

Educational profile: general academic
Form of studies: full-time
Level of qualification: second degree studies
Qualifications gained: second degree studies
Area of education: in science

2017/18

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
7	Specialized workshop of mathematical English	**1**	2	zal_O		**30**		1	30	30	31	30	61	o
8	Foreign language II. 1	**1**	2	zal_O		**30**		1	30	30	30	30	60	o
9	Foreign language II. 2	**2**	2	zal_O		**30**		1	30	30	30	30	60	o
	Basic subjects													
1	Mathematical analysis II	1	6	Egz.	**45**	**45**		5	65	90	95	45	160	o
2	Complex analysis	1	4	Egz.	**30**	**30**		2	50	60	62	30	112	o
3	Functional analysis	2	4,5	Egz.	**30**	**30**		2	55	60	62	30	117	o
	Subjects for field of study													
1	Algebra II	2	4,5	Egz.	**30**	**30**		2	55	60	62	30	117	o
2	Advanced numerical methods	3	4,5	Egz.	**30**		**30**	3	60	60	63	30	123	o
3	Subject to be choosen 1	3	1	zal_O	**15**			0	15	15	15	0	30	f
	History of mathematics ^^^													
	Polish school of mathematics ^^^													
4	Mathematical logic	4	6	Egz.	**30**	**45**		5	80	75	80	45	160	o

	Subjects for speciality													
1	Topology II	1	5	Egz.	**30**	**30**		2	63	60	62	30	125	f
2	Psychology (the 3-rd and the 4-th stage of education)	1	2,5	zal_O	**15**	**15**		2	32	30	32	15	64	f
3	Pedagogy (the 3-rd and the 4-th stage of education)	1	2,5	zal_O	**15**	**15**		2	32	30	32	15	64	f
4	Psychological-pedagogical practical training	1	2	zal_O		**30**		0	30	30	30	30	60	f
5	Teaching methods of mathematics II (the third and fourth stage of education)	2	6	Egz.	**30**	**60**		5	80	90	95	60	175	f
6	Half-year practical training - mathematics- junior high school	2	1	zal.		**15**		0	15	15	15	15	30	f
7	Half-year practical training - mathematics- high school	2	1	zal.		**15**		0	15	15	15	15	30	f
8	Theoretical physics	3	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
9	Subject to be choosen 2	3	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
	Selected topics in number theory ^													
	Theoretical arithmetic ^													
10	Differential geometry II	3	4	Egz.	**30**	**30**		2	50	60	62	30	112	f
11	Przedmiot do wyboru 3	3	6	Egz.	**30**	**45**		3	90	75	78	45	168	f
	Non-Euclidean geometry ^^													
	Projective geometry ^^													
	Specialising													
1	Specialized lecture 1	1	2,5	zal_O	**30**			5	30	30	35	30	65	f
2	Specialized lecture 2	2	2,5	zal_O	**30**			5	30	30	35	0	65	f
3	Seminar for the master's degree 1	2	2,5	zal_O		**30**		5	30	30	35	30	65	f
4	Specialized lecture 3	3	2,5	zal_O	**30**			5	30	30	35	0	65	f
5	Seminar for the master's degree 2	3	4	zal_O		**45**		5	50	45	50	45	100	f
6	Seminar for the master's degree 3	4	4	zal_O		**45**		5	50	45	50	45	100	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	exams	lec.	exer.	lab.	others	self-study	lec.+ex.	contact.	pract.	others	
semester 1	**1**	**30**	**3**	177	225	0	24	380	402	425	255	805	
semester 2	**2**	**30**	**4**	120	210	0	72	418	330	401	370	819	

semester 3	**3**	**30**	**3**	195	180	30	22	395	405	427	210	822	
semester 4	**4**	**30**	**1**	30	90	0	210	430	120	330	290	760	
Number of exams/ ECTS		**120**	**11**	**522**	**705**	**30**	**328**	**1623**	**1257**	**1583**	**1125**	**3206**	

I	**ECTS:** **summary**	**ECTS**		**Hours**	
			%		**%**
	Together in plan of studies	120	100%	3206	100%
1	requiring the direct contact with an academic teacher*	59,3	49,4%	1583	49,4%
2	in basic sciences	14,5	12,1%	389	12,1%
3	of practical nature (laboratories, projects, workshops)	42,1	35,1%	1125	35,1%
4	general academic to be realized with another field of study	7,5	6,3%	215	6,7%
5	Humanity and social subjects	6	5,0%	158	4,9%
6	subjects to be chosen - at least 30% of ECTS	83	69,2%	2202	68,7%
7	Professional practice	6	5,0%	160	5,0%

II	**Percentage of ECTS for each field of study in ECTS**	%
	field of study	
1	science	**100%**
	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
In order to study "teaching mathematics" the student is obliged to have necessary skills to teach at school.
(speciality: teaching mathematics during the first degree studies)
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.

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can determine parameters of the distribution of a random variable with discrete and continuous distribution

in the category of social competences
is able to formulate opinions concerning the basic issues of mathematics
can work as a team, understands the need for systematic work in all projects that have a long-term nature

MATHEMATICS, speciality: Applied Mathematics

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

	Semester 1	ECTS		lect.	exc.	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	**30**		
6	Specialized workshop of mathematical English	2	zal_O		**30**	
7	Foreign language II.1	2	zal_O		**30**	
8	Mathematical analysis II	6	Egz.	**45**	**45**	
9	Complex analysis	4	Egz.	**30**	**30**	
10	Differential equations II	4	Egz.	**30**	**30**	
11	Elements of the mathematics of life insurance	4	Egz.	**30**	**30**	
12	Statistics package	2	zal_O			**30**
13	Specialized lecture 1	2,5	zal_O	**30**		

	Semester 2	ECTS		lect.	exc.	lab.
1	Foreign language II. 2	2	zal_O		**30**	
3	Functional analysis	4,5	Egz.	**30**	**30**	
4	Algebra II	4,5	Egz.	**30**	**30**	
5	Estimation theory	4	Egz.	**30**	**30**	
6	Elements of risk theory	4	Egz.	**30**	**30**	
7	Specialized lecture 2	2,5	zal_O	**30**		
8	Seminar for the master's degree 1	2,5	zal_O		**30**	
9	Professional practice	6	zal_O			

	Semester 3	ECTS		lect.	exc.	lab.
1	Humanity and sociology course 2	2	zal_O	**30**		
2	Advanced numerical methods	4,5	Egz.	**30**		**30**
3	Subject to be choosen 1	1	zal_O	**15**		
	History of mathematics ^^^					
	Polish school of mathematics ^^^					
4	Subject to be choosen 2					
	Advanced programming ^	4	zal_O	**30**	**30**	
	Discrete mathematics ^					
5	Subject to be choosen 3	4	zal_O	**30**	**30**	
	Operating research II ^^					
	Optimization methods II ^^					
6	Stochastic processes	4	Egz.	**30**	**30**	
7	Verification of statistical hypotheses	4	Egz.	**30**	**30**	
8	Specialized lecture 3	2,5	zal_O	**30**		
9	Seminar for the master's degree 2	4	zal_O		**45**	

	Semester 4	ECTS		lect.	exc.	lab.
1	Mathematical logic	6	Egz.	**30**	**45**	
2	Seminar for the master's degree 3	4	zal_O		**45**	
3	Diploma Thesis	20				

MATHEMATICS, speciality: Teaching Mathematics

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Area of education: in science

	Semestr 1	ECTS		lect.	exc.	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	Specialized workshop of mathematical English	2	zal_O		**30**	
6	Foreign language II.1	2	zal_O		**30**	
7	Mathematical analysis II	6	Egz.	**45**	**45**	
8	Complex analysis	4	Egz.	**30**	**30**	
9	Topology II	5	Egz.	**30**	**30**	
10	Psychology (the 3-rd and the 4-th stage of education)	2,5	zal_O	**15**	**15**	
11	Pedagogy (the 3-rd and the 4-th stage of education)	2,5	zal_O	**15**	**15**	
12	Psychological-pedagogical practical training	2	zal_O		**30**	
13	Specialized lecture 1	2,5	zal_O	**30**		

	Semestr 2	ECTS		lect.	exc.	lab.
1	Foreign language II .2	2	zal_O		**30**	
3	Functional analysis	4,5	Egz.	**30**	**30**	
4	Algebra II	4,5	Egz.	**30**	**30**	
5	Teaching methods of mathematics II (the third and fourth stage of education)	6	Egz.	**30**	**60**	
6	Half-year practical training - mathematics- junior high school	1	zal.		**15**	
7	Half-year practical training - mathematics- high school	1	zal.		**15**	
8	Specialized lecture 2	2,5	zal_O	**30**		
9	Seminar for the master's degree 1	2,5	zal_O		**30**	
10	Professional practice	6	zal_O			

	Semestr 3	ECTS		lect.	exc.	lab.
1	Advanced numerical methods	4,5	Egz.	**30**		**30**
2	Subject to be choosen 1	1	zal_O	**15**		
	History of mathematics ^^^					
	Polish school of mathematics ^^^					
3	Theoretical physics	4	Egz.	**30**	**30**	
4	Subject to be choosen 2	4	Egz.	**30**	**30**	
	Selected topics in number theory ^					
	Theoretical arithmetic ^					
5	Differential geometry II	4	Egz.	**30**	**30**	
6	Subject to be choosen 3	6	Egz.	**30**	**45**	
	Non-Euclidean geometry ^^					
	Projective geometry ^^					
7	Specialized lecture 3	2,5	zal_O	**30**		
8	Seminar for the master's degree 2	4	zal_O		**45**	

	Semestr 4	ECTS		lect.	exc.	lab.
1	Mathematical logic	6	Egz.	**30**	**45**	
2	Seminar for the master's degree 3	4	zal_O		**45**	
3	Diploma Thesis	20				