PLAN OF STUDIES

FACULTY: Computer Science and Management
MAIN FIELD OF STUDY: Informatics
EDUCATION LEVEL: 1st / 2nd-* level, licencjat / inżynier / magister / magister inżynier*
FORM OF STUDIES: full-time / part-time*
PROFILE: general academic / practical *
SPECIALIZATION: specializations no distinguished
LANGUAGE OF STUDY: English
Faculty Council Resolution of
In effect since

^{*}delete as applicable

Plan of studies structure (optionally) 1) in point layout

27	CNPS ECTS	CNPS ECTS	CNPS ECTS	CNPS ECTS	CNPS ECTS	CNPS ECTS	CNPS ECTS	27
26	900 30	900 30	900 30	900 30	900 30	900 30	900 30	26
25						Practical Training		25
24			Sport		M_4	150 5 ECTS		24
23		Humanistic subject I	30 1 ECTS	M_1	120 4 ECTS	130 3 EC15		23
22	Introduction to Computer	60 2 ECTS	Logics and Discrete	150 5 ECTS	120 41015			22
21	Systems	General Physics 60 2 ECTS	Mathematics		M_3	M_5	M_7	21
20	150 5 ECTS	00 2 EC15	180 6 ECTS	Multimedia Embedded	120 4 ECTS	150 5 ECTS	150 5 ECTS	20
19	Introduction to	Foreign Language		Systems	120 4 EC15			19
18	Programming	90 3 ECTS	Object-Oriented	150 5 ECTS		Preparatory project		18
17	210 7 ECTS		Programming	130 3 EC13	M_2	60 2 ECTS	M_6	17
16		Computer Architecture and	150 4 ECTS	Computer Networks and	150 5 ECTS	00 2 EC15	150 5 ECTS	16
15	General Physics	Organization	1	Communications		Team Project		15
14	150 5 ECTS	150 6 ECTS	Theory of Information and	150 5 ECTS	Data Warehouses	Ů	Diploma Seminar	14
13	100 0 2015		Signals		Data Warehouses	150 5 ECTS	60 2 ECTS	13
12	Foreign Language		180 6 ECTS	Systems analysis and	150 5 ECTS	Introduction to Parallel and		12
11		Data Structures and Algorithms		decision support methods in Computer Science		Distributed Systems	Internet Technologies	11
10	60 2 ECTS	180 6 ECTS	Electronics and Metrology – basic principles	-	Introduction to Management Science	150 5 ECTS	120 4 ECTS	10
9			60 2 ECTS	150 5 ECTS	60 2 ECTS			9
7	Elementary Linear Algebra	El	Databases	Operating Systems	Computer Control Systems	Computer Security	Humanistic subject II	7
6	150 5 ECTS	Electronics and Metrology – basic principles	150 5 ECTS	150 5 ECTS	150 5 ECTS	120 4 ECTS	60 2 ECTS	6
5	130 3 EC15	150 5 F.C.T.C.	130 SEC15		3 2015	120 4 EC15		5
4		150 5 ECTS			g c		Diploma Thesis	4
3	Mathematical Analysis I	Mathematical Analysis II	Theory of Probabilistic and Statistics	Introduction to Software Engineering	Software System Development	Introduction to Artificial Intelligence	360 12 ECTS	3
2		210 6 ECTS	150 6 ECTS	150 5 ECTS		120 4 ECTS		2
1	180 6 ECTS			150 5 EC15	150 5 ECTS			1
	I	II	III	IV	v	VI	VII	Total
	22 / 330	23 / 345	24 / 360	24 / 360	24 / 360	22 / 330	22/330	161/2415

2) in hourly layout

27	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	27
26	900	30	900	30	900	30	900	30	900	30	900	30	900	30	26
25											Practical	l Training			25
24					Sp	ort			M	_4	1	1			24
23			Humanisti	c subject I	024	200	M	_1		_	4 W	eeks			23
22	Introduction	to Computer	_	_	020		┧ ,	lh .	3	h					22
21	Syst	ems	General	h Physics	Logics an Mathe		1	111			M	I_ 5	_		21
	210	100	001	•	Matne	manes			M	_3			N	I_ 7	2.
20	210	<i>,</i> 00			2200	00 E	Multimedia	a Embedded	3	h	4	4 h	4	4h	20
19	Introdu	ction to	Foreign I	Language			Syst	tems							19
18	Prograi	mming	040	000	Object-0	Oriented	200	200			Preparato	ory project			18
17	202	200			Progra		20.	200	M	_2			N	1_6	17
16	202		G	12	-		G ()	T . 1 1	4	h	00	020		4h	16
15	General	Dhyaiaa	Computer Ard Organi		202	200	1	letworks and nications							15
14	General	Physics	Organi	Zution	Theory of Inf	formation and		incutions			Team	Project	Dinlom	a Seminar	14
	2100	00 E	2020	00 E	Sign		202	00 E	Data Wa	rehouses	00	040	Dipionia	a Semmar	13
13													00	002	
12	Foreign I	anguage	Data Struc Algor		2200	00 E	Systems	nalysis and	202	200		to Parallel and			12
11	1 0101811 1	ann gange	111501				decision sup	port methods			Distribute	ed Systems	Internet T	echnologies	11
10	040	000	2120	00 E	Electronics ar			ter Science 00 E		ction to	21	100			10
9			2120	DO E	– basic princi	ples 00200	211	UU E		ent Science 000			20	200	9
8							Operating	g Systems	Computer Co	ntrol Systems			Humanist	ic subject II	8
7	E1	:	Electronics at	nd Metrology	Data	bases					Compute	er Security	,	2h	7
6	Elementary L	illear Aigebra	– basic p	rinciples	202	200			102	10 E	21	100	4	211	6
5	2200	00 E	210	000			202	00 E	102	10 E					5
4			210						G 6	g .			Diplom	na Thesis	4
3	Mathematica	al Analysis I	Mathematica	al Analysis II	Theory of Pro	habilistic and		to Software		e System opment		to Artificial		5h	3
2			2200	no E	Stati		Engin	eering	Beven	-p.mom		igence		711	2
	2200	00 E	2200	DO E	2200	00 E			200	020	202	00 E			
1							211	00 E							1
	j	[I	I	I	П	I	V	'	V	1	VI	1	/II	Total
	22 /	330	23 /	345	24 /	360	24 /	360	24 /	360	22 /	/ 330	22.	/330	161/2415

1. Set of obligatory and optional courses and groups of courses in semestral arrangement

Semester 1

No.	Course/group	Name of course/group of courses (denote	Weel	kly 1	numb	er of	hours	Field-of-study educational	Numbe	r of hours	Numbe	er of ECTS points	Form ² of	Way ³ of	Course/gr	oup of co	urses	
	of courses code	group of courses with symbol GK)	lec	cl	lab	pr	sem	effect symbol	ZZU	CNPS	total	BK classes ¹	course/group of courses	crediting	university-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	FZP1052C	General Physics		1				K1INF_W03	15	60	2	1,2	T	Z	О		PD	Ob.
2	FZP1052W	General Physics	2					K1INF_W03	30	90	3	1,8	T	Е	О		PD	Ob.
3	MAP1070C	Elementary Linear Algebra		2				K1INF_W01	30	60	2	1,2	T	Z	0		PD	Ob.
4	MAP1070W	Elementary Linear Algebra	2					K1INF_W01	30	90	3	1,8	Т	Е	О		PD	Ob.
5	MAP1043C	Mathematical Analysis I		2				K1INF_W01	30	60	2	1,2	T	Z	О		PD	Ob.
6	MAP1043W	Mathematical Analysis I	2					K1INF_W01	30	120	4	2.4	Т	Е	О		PD	Ob
7	INZ0250Wl	Introduction to Programming (GK)	2		2			K1INF_W04,	60	210	7	4,2	T	Z		(3)	PD	Ob.
								K1INF_U01, K1INF_U14										
8	INZ0251Wc	Introduction to Computer Systems (GK)	2	1				K1INF_W08	45	150	5	3,0	T	Z			PD	Ob
		Total	10	6	2				270	840	28	16,8						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (minimum 60 hours in semester, 2ECTS points)

1	No	Course/group of courses	Name of course/group of courses (denote group of courses with	We	ekly	numb	er of	hours	Field-of-study educational	h	nber of ours	Numb	er of ECTS points	Form ² of course/group	-	U	oup of cou	rses	
		code		lec	cl	lab	pr	sem	effect symbol	ZZU	CNPS	total	BK classes ¹	of courses		university-wide ⁴	practical ⁵	kind ⁶	type ⁷
	1	JZL100400BK	JĘZ.OBCE-STACJ.WSZYSTKIE		4				K1INF_U17	60	60	2	1,2	Т	Z	0		КО	W
			Total		4					60	60	2	1,2						

	Tota	l number of	hours		Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
10	10	2			330	900	30	18

 $^{^{1}}BK$ – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students $^{2}Traditional$ – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization ⁷ Optional – enter W, obligatory – enter Ob

No.	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	W		ly nu hou	ımber rs	Field-of-study educational effect symbol	Number of	f hours		imber of TS points	Form ² of course/group			group of	course	ès
	code	courses with symbol GK	lec			or sem		ZZU	CNPS			of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	FZP2079L	General Physics			1		K1INF_W03, K1INF_U07, K1INF_U14	15	60	2	1,2	Т	Z	0	P	PD	Ob
2	MAP2005C	Mathematical Analysis II		2			K1INF_W01	30	90	2	1,2	Т	Z	О		PD	Ob
3	MAP2005W	Mathematical Analysis II	2				K1INF_W01	30	120	4	2,4	T	Е	О		PD	Ob
4	INZ0252Wc	Electronics and Metrology – basic principles (GK)	2	1			K1INF_W07 K1INF_W08, K1INF_U14	45	150	5	3,0	Т	Z			PD	Ob
5	INZ0253W1	Computer Architecture and Organization (GK)	2		2		K1INF_W08, K1INF_U06, K1INF_U14	60	150	6	3,6	Т	Е		(3)	K	Ob
6	INZ0254Wcl	Data Structures and Algorithms (GK)	2	1	2		K1INF_W04 K!INF_U01, K1INF_U14	75	180	6	3,6	Т	Е		(3)	K	Ob
		Total	8	4	5			255	750	25	15						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (minimum 60 hours in semester, 3 ECTS points)

No.	. Course/group of	Name of course/group of courses	Wee	ekly	numb	er of	hours				Number of l	ECTS points	1	Way ³ of		group of c	ourses	
	courses code	(denote group of courses with symbol GK)	lec	cl	lab	pr	sem	educational effect symbol	ZZU	CNPS	total	BK classes ¹	of courses	crediting	university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	JZL100400BK	JĘZ.OBCE- STACJ.WSZYSTKIE		4				K1INF_U17	60	90	3	1,8	Т	Е	0		КО	W
		Total		4					60	90	3	1,8						

Optional courses (Humanistic subject I) (minimum 30 hours in semester, 2 ECTS points)

No	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol		Veek	ly nui hour		r of	Field-of-study educational effect		nber of ours		mber of S points	Form ² of course/group of	Way ³ of crediting	Course/g	group of c	ourse	'S
		GK)	lec	cl	lab	pr	sem	symbol	ZZU	CNPS	total	BK classes ¹	courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0295s	Computer Ethics					2	K1INF_W20, K1INF_K03, K1INF_K05	30	60	2	1,2	Т	Z			K	W
2	INZ0296Ws	Ethical Problems in Computer Science (GK)	1				1	K1INF_W20, K1INF_K03, K1INF_K05	30	60	2	1,2	T	Z			K	W
		Total					2		30	60	2	1,2						

	To	otal number o	of hours		Total number of ZZU hours		Total number of ECTS points	
lec	cl	lab	pr	sem				
8	8	5		2	345	900	30	18

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	We		y num hours		of Field-of-study educational effect symbol		mber of nours		aber of ECTS points	Form ² of course/group					
	code	,	lec	cl	lab p	or sea	em	ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind	type
1	INZ0255C	Theory of Information and Signals		2			K1INF_W11,	30	60	2	1,2	T	Z			K	Ob
							K1INF_U07										
2	INZ0255W	Theory of Information and Signals	2				K1INF_W11	30	120	4	2,4	T	Е			K	Ob.
3	INZ0256L	Electronics and Metrology – basic principle			2		K1INF_W07, K1INF_U14	30	60	2	1,2	T	Z		P	PD	Ob.
4	INZ0257C	Theory of Probabilistic and Statistics		2			K1INF_W02	30	60	2	1,2	T	Z			PD	Ob.
5	INZ0257W	Theory of Probabilistic and Statistics	2				K1INF_W02	30	90	4	2,4	T	Е			PD	Ob.
6	INZ0258C	Logics and Discrete Mathematics		2			K1INF_W02, K1INF_W17	30	90	3	1,8	T	Z			PD	Ob
7	INZ0258W	Logics and Discrete Mathematics	2				K1INF_W02, K1INF_W17	30	90	3	1,8	T	Е			PD	Ob
8	INZ0259Wcl	Databases (GK)	2	1	1		K1INF_W07, K1INF_W16	60	150	5	3,0	T	Е		(2)	K	Ob
							K1INF_W22										
							K1INF_U19,										
							K1INF_U04, K1INF_U09, K1INF_U1	14									
9	INZ00260W1	Object-Oriented Programming (GK)	2	П	2		K1INF_U02, K1INF_U14	60	150	4	2,4	T	Z		(2)	K	Ob.
							K1INF_W05, K1INF_W06										
		Total	10	7	5			330	870	29	17,4						

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²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (minimum 30 hours in semester, 1 ECTS point)

N	lо	Course/group of	Name of course/group of courses	Week	ly n	umbe	r of l	nours	Field-of-study	Numbe	r of hours	Numb	er of ECTS points	Form ² of	Way3 of	Course/gr	oup of cou	rses	
		courses code	(denote group of courses with symbol GK)	lec	cl	lab	pr	sem	educational effect symbol	ZZU	CNPS	total	BK classes ¹	of courses	crediting	university-wide ⁴	practical ⁵	kind ⁶	type ⁷
	1	WFW000000BK	SPORT		2				K1INF_K08	30	30	1	0,6	Т	Z	О	P	КО	W
			Total		2					30	30	1	0,6						

	To	otal number o	of hours			Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
10	9	5			360	900	30	18

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²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)		ekly of h			Field-of-study educational effect symbol		nber of ours		mber of S points	Form ² of course/group			group of	cours	es
	code		lec c	el la	ıb p	r sem		ZZU	CNPS	total	BK classes 1	of courses		university- wide ⁴	practical ⁵	kind ⁶	type
1	INZ0297W	Systems analysis and decision support methods in Computer Science	2				K1INF_W15	30	90	3	1,8	Т	Е			K	Ob
2	INZ0297C	Systems analysis and decision support methods in Computer Science		1			K1INF_U15, K1INF_U14	15	30	1	0,6	T	Z			K	Ob
3	INZ0297L	Systems analysis and decision support methods in Computer Science		1	1		K1INF_W15	15	30	1	0,6	T	Z		Р	K	Ob
4	INZ0262W	Computer Networks and Communications	2				K1INF_W11	30	90	3	1,8	Т	Е			K	Ob
5	INZ02621	Computer Networks and Communications		2	2		K1INF_U08, K1INF_U07, K1INF_U09, K1INF_U14		60	2	1,2	Т	Z		Р	K	Ob
6	INZ0263Wcl	Introduction to Software Engineering (GK)	2	1 1			K1INF_U03, K1INF_U14 K1INF_W07	60	150	5	3,0	T	Е		(2)	K	Ob
7	INZ0264Wl	Operating Systems (GK)	2	2	2		K1INF_W10, K1INF_U03 K1INF_U06, K1INF_U14		150	5	3,0	Т	Z		(2)	K	Ob
8	INZ0265Wl	Multimedia Embedded Systems (GK	2	2	2		K1INF_U04, K1INF_U06, K1INF_W09, K1INF_U14		150	5	3,0	Т	Z		(2)	K	Ob
		Total	10	2 8	3			300	750	25	15						

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³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Optional module M 1: Database Programming) (minimum 60 hours in semester, 5 ECTS points)

		ses (Optional module M_1.1.1					- O/ ∖										
No	Course/group	Name of course/group of courses	V		ly num	per of		Number	of hours		of ECTS	Form ² of	Way ³ of	Course	group of c	ourse	S
	of courses	(denote group of courses with symbol			hours		symbol			po		course/grou	crediting				
	code	GK)										p of courses					
			lec	cl	lab pı	sem		ZZU	CNPS	total	BK			university-	practical ⁵	$kind^{\epsilon}$	type ⁷
											classes			wide ⁴			7.1
1	INZ0266Wp	Database Design (GK)	2		2		K1INF_W07, K1INF_W16,	60	150	5	3,0	Т	Z		(2)	K	W
							K1INF_W22, K1INF_U03,										
							K1INF_U04, K1INF_U09,										
							K1INF_U16, K1INF_U19										
2	INZ0267Wl	Client-Server Architecture (GK)	2		2		K1INF_W07, K1INF_W16,	60	150	5	3,0	T	Z		(2)	K	W
							K1INF_W22, K1INF_U03,										
							K1INF_U04, K1INF_U09,										
							K1INF_U16, K1INF_U19										
		Total	2		2			60	150	5	3,0						

	To	otal number o	of hours		Total	Total	Total	Number of
					number	number	number	
					of	of CNPS	of ECTS	for BK
					ZZU	hours	points	classes1
					hours			
lec	cl	lab	pr	sem				
12	2	8	2		360	900	30	18

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²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol		Veek	ly nu hou		er of	Field-of-study educational effect symbol	Number of	hours		mber of S points	Form ² of course/group			e/group of	cours `	es
	code	GK)	lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes	of courses		university -wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ZMZ3456W	Introduction to Management Science	2					K1INF_W18	30	60	2	1,2	Т	Z			PD	Ob
2	INZ0268W1	Data Warehouses (GK)	2		2			K1INF_U03, K1INF_U04,	60	150	5	3,0	Т	Z		(2)	K	Ob
								K1INF_U16, K1INF_U14										
								K1INF_W07, K1INF_W15										
3	INZ0298W	Computer Control Systems	1					K1INF_W15, K1INF_W21	15	30	2	1,2	Т	Е			K	Ob
4	INZ0298L	Computer Control Systems			2			K1INF_W07, K1INF_U15,	30	90	2	1,2	T	Z		P	K	Ob
								K1INF_U18, K1INF_U14										
5	INZ0298P	Computer Control Systems				1		K1INF_W07, K1INF_U15,	15	30	1	0,6	T	Z		P	K	Ob
								K1INF_U18, K1INF_K02										
6	INZ0270Wp	Software System Development (GK)	2			2		K1INF_U02, K1INF_U03,	60	150	5	3,0	T	Е		(2)	K	Ob.
								K1INF_U04, K1INF_U13,										
								K1INF_U14, K1INF_W05										
								K1INF_W07										
	l .	Total	7	0	4	3			210	510	17	10,2						

 $^{^{1}}BK$ – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students $^{2}Traditional$ – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Optional module M_2: Multimedia) (minimum 60 hours in semester, 5 ECTS points)

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	W		y numbe hours	er of	Field-of-study educational effect symbol		nber of ours	Nun	ber of ECTS points	Form ² of course/group	-	Course/g	group of c	courses	s
	code	<i>y</i> ,	lec	cl	lab pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0271WI	Introduction to Computer Graphics (GK)	2		2		K1INF_U04, K1INF_U09, K1INF_U11, K1INF_U12, K1INF_U14, K1INF_W23	60	150	5	3,0	Т	Z		(2)	K	W
2	INZ0272W1	Multimedia Information Systems (GK)	2		2		K1INF_U04, K1INF_U09, K1INF_U11, K1INF_U12, K1INF_U14, K1INF_W23	60	150	5	3,0	T	Z		(2)	K	W
		Total	2		2			60	150	5	3,0						

Optional courses (Optional module M_3: Web application programming) (minimum 45 hours in semester, 4 ECTS points)

			` 1				8 8					/					
N		ourse/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	Week	ly num hours		Field-of-study educational effect symbol		ber of urs	Nur	nber of ECTS points	Form ² of course/group	•		e/group of c	ourses	
		code		lec cl	lab p	r sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
	1 IN	NZ0273W1	Java and Internet programming (GK)	1	2		K1INF_U04, K1INF_U09, K1INF_U11, K1INF_U12, K1INF_U14, K1INF_W05, K1INF_W06, K1INF_W07	45	120	4	2,4	Т	Z		(2)	K	W
	2 IN	NZ0274W1	Programming of Web-based systems (GK)	1	2		K1INF_U04, K1INF_U09, K1INF_U11, K1INF_U12, K1INF_U14, K1INF_W05, K1INF_W06, K1INF_W07	45	120	4	2,4	Т	Z		(2)	K	W
			Total	1	2			45	150	4	2,4						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Optional module M_4: Software Project Management) (minimum 45 hours in semester, 4 ECTS points)

		` I			<u>. </u>		0 / \					/					
No	Course/group	Name of course/group of courses (denote group		Week	ly		Field-of-study educational effect	Num	ber of	Num	ber of ECTS	Form ² of	Way ³ of	Course	group of c	ourses	ŝ
	of courses	of courses with symbol GK)	n	umbe			symbol	ho	urs		points	course/group	crediting				
	code		L .	hou								of courses			_		
			lec	llab	prse	em		ZZU	CNPS	total	BK classes1			university-	practical ⁵	kind ⁶	type ⁷
		_												wide ⁴			
1	INZ0275W1	Software Project Management (GK)	2	1			K1INF_U10, K1INF_K02,	45	120	4	2,4	T	Z		(2)	K	W
							K1INF_U14, K1INF_W18										
2	INZ0276Wls	Software Project Management Techniques	1	1		1	K1INF_U10, K1INF_K02,	45	120	4	2,4	T	Z		(2)	K	W
		(GK)					K1INF_U14, K1INF_W18										
		(311)															
			1.1	+-	-	_										+-	\vdash
		Total	1	1		1		45	120	4	2,4						

	To	otal number o	of hours		Total number of ZZU hours		Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
11	0	9	3	1	360	900	30	18

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Obligatory courses number of ECTS points 13

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)			y nun hours		Field-of-study educational effect symbol	Numb hou			umber of TS points	Form ² of course/gro			group of	course	es
	code		lec o	el la	ab pr	sem		ZZU	CNPS	total	BK classes 1	up of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0277Wl	Introduction to Parallel and Distributed Systems (GK)	2	1	1		K1INF_U04, K1INF_U14, K1INF_W12	60	150	5	3,0	T	Е		(2)	K	Ob
2	INZ0278Wcl	Computer Security (GK)	2	1	1		K1INF_U03, K1INF_U09, K1INF_U14, K1INF_W13	60	120	4	2,4	T	Е		(2)	K	Ob
3	INZ0279Wl	Introduction to Artificial Intelligence (GK)	2		2		K1INF_U07, K1INF_U16, K1INF_U14, K1INF_W15	60	120	4	2,4	T	Е		(2)	K	Ob
		Total	6	2	4			180	390	13	7,8						

Optional courses (minimum 90 hours in semester, 12 ECTS points)

No	Course/group	Name of course/group of courses (denote group of	Weekl		-	_	Field-of-study educational effect	Number of	hours	Nu	mber of	Form ² of	Wav ³ of	Course	group of	cour	ses
110.	of courses	courses with symbol GK)		hours		0.	symbol	T (dillot) of				course/group	-		group or	Cours	,00
	code		lec cl	lab	pr	sem	•	ZZU	CNPS	total	BK	of courses		university-	practical ⁵	$^{ ext{kind}^{\epsilon}}$	type ⁷
			i								classes1			wide ⁴			JF
1	INZ0280P	Preparatory Project			2		K1INF_K01, K1INF_K02,	30	60	2	1,2	T	Z		P	K	W
			i l				K1INF_K03, K1INF_K04,										
			i l				K1INF_K05, K1INF_U11,										
							K1INF_U12, K1INF_U13									<u> </u>	
2	INZ0281P	Team Project	i l		4		K1INF_U02, K1INF_U05,	60	150	5	3,0	T	Z		P	K	W
			i l				K1INF_U06, K1INF_U10,										
			i l				K1INF_U12, K1INF_U13,										
			i l				K1INF_K01, K1INF_K03,										
-			\vdash	+			K1INF K04. K1INF K05									—	igspace
3		Practical Training							150	5							
		Total			6			90	360	12	4,2						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Optional module M 5: Network and computer systems) (minimum 60 hours in semester, 5 ECTS points)

No	Course/group of courses	Name of course/group of courses (denote group of courses with	W		ly nu hour		er of	Field-of-study educational effect symbol		nber of ours	Nur	nber of ECTS points	Form ² of course/group	-	Course/gr	roup of co	ourses	
	code	symbol GK)	lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0282Wl	Security in Computer Network (GK)	2		2			K1INF_U03, K1INF_U09, K1INF_U14	60	150	5	3,0	Т	Z		(2)	K	W
								K1INF_W13										
2	INZ0283Wl	System Administration (GK)	2		2			K1INF_W10, K1INF_W11,	60	150	5	3,0	Т	Z		(2)	K	W
								K1INF_U08,, K1INF_U09, K1INF_U14										
•	•	Total	2		2				60	150	5	3,0						

	To	otal number o	of hours		Total number of ZZU hours	Total number of CNPS hours		Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
8	2	6	6		330	900	30	15,0

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Obligatory courses number of ECTS points 4

No	Course/group of courses	Name of course/group of courses (denote group of courses with	Weekly number of hours		of	Field-of-study educational effect symbol	Number	of hours			Form ² of course/group	,		roup of courses		j		
	code	symbol GK)	lec	cl la	b I	pr s	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0284W1	Internet Technologies (GK)	2	2	2			K1INF_U06, 1INF_U07, K1INF_U14, K1INF_U05, K1INF_W14	60	120	4	2,4	Т	Z		(2)	K	Ob
		Total	2	2	2				60	120	4	2,4						

Optional courses (minimum120 hours in semester, 14 ECTS point)

No	Course/group of courses	Name of course/group of courses (denote group of courses with	W	Weekly number of hours		ber of	Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/grou	_	Course/gr	roup of co	urses	
	code	symbol GK)	lec	cl la	b p	r sem	- The state of the	ZZU	CNPS	total		p of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0285s	Diploma Seminar				2	K1INF_K01, K1INF_K02, K1INF_K03, K1INF_K04, K1INF_K05, K1INF_U11, K1INF_U12, K1INF_U13	30	60	2	1,2	Т	Z			K	W
2	INZ0286p	Diploma Thesis			6	5	K1INF_K01, K1INF_K02, K1INF_K03, K1INF_K04, K1INF_K05, K1INF_U11, K1INF_U12, K1INF_U13	90	360	12	7,2	Т	Z		P	K	W
		Total			6	5 2		120	420	14	8,4						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Humanistic subject II) (minimum 30 hours in semester, 2 ECTS points)

No.	. Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)		Weekly number of hours		number of		number of		number of			Field-of-study educational effect symbol	Number	of hours		r of ECTS pints	Form ² of course/group of courses	Way ³ of crediting		group of	cours	es
			lec c	llab	pr se	em		ZZU	CNPS	total	BK classes ¹			university- wide ⁴	practical ⁵	kind ⁶	type ⁷						
1	INZ0287W	Social and Law Aspects of Computer Science	2				K1INF_W20, K1INF_W19, K1INF_K03, K1INF_K05	30	60	2	1,2	Т	Z			K	W						
2	INZ0288Ws	Copywrite and Related Computer Law (GK)	1			1	K1INF_W20, K1INF_W19, K1INF_K03, K1INF_K05	30	60	2	1,2	Т	Z			K	W						
		Total	1			1		30	60	2	1,2												

Optional courses (Optional module M_6: Technologies and programming tools) (minimum 60 hours in semester, 5 ECTS points)

<u>V</u>	tional cour	ses (Optional module M_0. Tech	1101	i U §	510	<i>y</i> u .	IIU.	programming tools) (min	11111	111 00	1100	ii b iii bci	iicster, 5	LCI	pomus			
No.	. Course/group	F			-		er of	Field-of-study educational effect			Num	ber of ECTS		,		group of o	ourse	s
	of courses	group of courses with symbol GK)	group of courses with symbol GK)		hours			symbol		ours	points		course/group	crediting				
	code		lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university-	practical ⁵	kind ⁶	type ⁷
															wide ⁴			
1	INZ0289Wcl	Programming Languages and Paradigms (GK)	2	1	1			K1INF_W05, K1INF_W06	60	150	5	3,0		Z		(2)	K	W
								K1INF_U02, K1INF_U14										
																	<u> </u>	
2	INZ0290W1	User Interface Development (GK)	2		2			K1INF_U06, K1INF_U07,	60	150	5	3,0	T	Z		(2)	K	W
								K1INF_U13, K1INF_W04										
3	INZ0291Wcl	Program Translation Techniques (GK)	2	1	1			K1INF_U01, K1INF_W06	60	150	5	3,0	T	Z		(2)	K	W
4	INZ0292Wc	Numerical Methods (GK)	2	2				K1INF_U01, K1INF_W04	60	150	5	3,0	T	Z		(2)	K	W
		,																
	1	Total	2	1	1	H			60	150	5	3,0						\vdash
		Total	_	1	•				30	130		3,0					ĺ	
										<u> </u>							Ш_	

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Optional courses (Optional module M_7: Development trends in computer science) (minimum 60 hours in semester, 5 ECTS points)

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	We	eekly number of hours			Field-of-study educational effect symbol	Number of hours				Form ² of Way ³ of course/group crediting		Course/group of courses			
	code		lec	cl l	ab pi	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0293W1	E-Business Concept and Technologies (GK)	2		2		K1INF_U11, K1INF_W14, K1INF_W12, K1INF_K01 K1INF_K06	60	150	5	3,0	T	Z		(2)	K	W
2	INZ0294Wc	Theory of Computation (GK)	2	2			K1INF_K01, K1INF_W02	60	150	5	3,0	Т	Z			K	W
		Total	2	1	1			60	150	5	3,0						

Altogether in semester

	То	otal number o	of hours		Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	
lec	cl	lab	pr	sem				
7	2	4	6	3	330	900	30	18

2. Set of examinations in semestral arrangement

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Course code	Names of courses ending with examination	Semester
FZP1052W	1. General Physics	1
MAP1070W	2. Elementary Linear Algebra	
MAP1943W	3. Mathematical Analysis I	
INZ0253W1	Computer Architecture and Organization	2
INZ0254Wcl	2. Data Structures and Algorithms	
MAP2005W	3. Mathematical Analysis II	
JZL100400BK	4. Foreign language	
INZ0258W	Logics and Discrete Mathematics	3
INZ0255W	2. Theory of Information and Signals	
INZ0257W	3. Theory of Probalilistics and Statisctics	
INZ0259Wcl	4. Databases	
INZ0297W	1.Systems analysis and decision support methods in Computer Science	4
INZ0262W	2. Computer Networks and Communications	
INZ0263Wcl	3. Introduction to Software Engineering	
INZ0297W	1. Computer Control Systems	5
INZ0270Wp	2. Software System Development	
INZ0277W1	Introduction to Parallel and Distributed Systems	6
INZ0272W1	2. Computer Security	
INZ0279W1	3. Introduction to Artificial Intelligence	

3. Numbers of allowable deficit of ECTS points after particular semesters

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem) ⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses ⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Semester	Allowable deficit of ECTS points after semester
1	10
2	10
3	10
4	10
5	5
6	0

Opinion of student government legislative body
Date Name and surname, signature of student representative
Date Dean's signature

 $^{^{1}}BK$ – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students $^{2}Traditional$ – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob