Zał. nr 3 do ZW 64/2012 Attachment no. ... to Programme of Studies

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

			f studies	structure	(optiona	ally) 1) in	1 point la	iyout							
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											Practi	cal Training			25
24					1	Sport				M_4	5	ECTS			24
23			Humani	stic subject I	30	1 ECTS		M_1	120	4 ECTS		Leib			23
22	Introduction to C	1	60	2 ECTS	Logics	and Discrete	150	5 ECTS	120	Leib					22
21	Systems			al Physics	U	hematics				M 3		M_5		M_7	21
20	150 5 EC	TS	60	2 ECTS	100	6 ECTS				-	150	5 ECTS	150	5 ECTS	20
19	Introduction	. to	Foreig	n Language	180	OECIS		dia Embedded ystems	120	4 ECTS			150	5 EC15	19
19	Programmi		90	3 ECTS			- 3	ysteriis			Dronom	atory project			19
17			90	JEC15	5	t-Oriented	150	5 ECTS		M_2	Prepara	atory project		M_6	18
17	210 7 EC	TS			Plog	ramming			150	E EXCER	60	2 ECTS	150		17
			1	Architecture and	150	4 ECTS	-	r Networks and nunications	150	5 ECTS			150	5 ECTS	16
15	General Phy	sics	Orga	anization			Comr	nunications			Tea	m Project	D' 1		15
14	150 5 EC	TS	150	6 ECTS	•	Information and	150	5 ECTS	Data	Warehouses	150	5 ECTS	Diploi	ma Seminar	
13					5	ignals			1.0		100	51015	60	2 ECTS	13
12	Foreign Lang	uage			180	6 ECTS		s analysis and	150	5 ECTS		on to Parallel and			12
11				ructures and orithms				upport methods puter Science			Distrib	uted Systems	Internet	Technologies	11
10	60 2 EC	18		6 ECTS		and Metrology		-		eduction to ement Science	150	5 ECTS	120	4 ECTS	10
9						2 ECTS	150	5 ECTS	60 Ŭ	2 ECTS					9
8	Elementary Linea	r Algebra			Da	itabases	Operat	ing Systems	Computer	Control Systems	Compu	uter Security	Humanı	stic subject II	8
7		-		and Metrology				5 ECTS	1	•			60	2 ECTS	7
6	150 5 EC	15			150	5 ECTS	150	5 EC 15	150	5 ECTS	120	4 ECTS			6
5			150	5 ECTS									Diplo	oma Thesis	5
4	Mathematical A	nalysis I	Mathemati	cal Analysis II		f Probabilistic		ion to Software		vare System velopment		ion to Artificial	2(0	12 ECTS	4
3		·	210	(ECTS		Statistics	Eng	gineering	Dev	reiopinent		elligence	360	12 ECTS	3
2	180 6 E C	TS	210	6 ECTS	150	6 ECTS	150	5 ECTS	150	5 ECTS	120	4 ECTS			2
1	I			Ш		ш		** /		v		VI		VII	1 Total
	_					-	IV	-	•	-		-			
	22 / 330		23	3 / 345	24	4 / 360	2	4 / 360	2	24 / 360	2	2/330	2	22/330	161/2415

		2) i	in hourly l	ayout											
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					Sp	port			Ν	/ _4	4 10	eeks			24
23			Humanisti	c subject I	02	000	N	1_ 1		3h	- w	CCR5			23
22		on to Computer	2	h				4h		511					22
21		ystems	General		0	nd Discrete ematics			Ν	4_3	М	_5	Ν	1_7	21
20	2	21000			220	00 E	Multimodi	a Embedded	1.	3h	4	h		4h	20
19	Intro	duction to	Foreign I	Language				stems		511					19
18	Prog	ramming	040	000	Object-	Oriented	20	200			Preparato	ry project			18
17	2	20200			•	mming	20	200	N	1_2	0.04	020	Ν	1_6	17
16			Computer Ard	chitecture and		200	Computer N	Networks and	1	4h	00	020		4h	16
15	Gener	al Physics		ization	20	200	-	inications			The second se				15
14		-	202		Theory of In	formation and					Team	Project	Diplom	a Seminar	14
13	21	1000 E	2020	00 E	-	gnals	202	200 E	Data W	arehouses	00	040			13
12			Data Strue	ctures and	220	00 E			20	200	T	o Parallel and	0(0002	12
11	Foreig	n Language		rithms	220		Systems a	nalysis and				d Systems			11
10	(4000			Electronics a	nd Metrology		oport methods iter Science	Introd	uction to			Internet T	echnologies	10
9	· · · · ·	1000	2120	00 E		iples 00200		.00 E	Managem	ent Science	202	200	20	0200	9
8					D	,	Operatin	g Systems	Computer C	ontrol Systems	G	a :	Humanist	ic subject II	8
7	Flementary	Linear Algebra	Electronics an		Data	ibases			1		Compute	r Security		2h	7
6	Elementary	Linear rigeora	– basic p	rinciples	20	200	202		102	210 E	21	100		# 4.4	6
5	22	2000 E	210	000			202	200 E	101						5
4									Softwar	re System	.		Diplon	na Thesis	4
3	Mathemat	ical Analysis I	Mathematica	ıl Analysis II		obabilistic and		n to Software neering		lopment	Introduction Intelli	to Artificial gence		6h	3
2			2200	00 E		istics		-	2(0020	202	00 E			2
1	22	2000 E			220	00 E	202	200 E	20						1
		I	I	I	I	II		IV IV		V	V	Ί	, v	II	Total
	2:	2 / 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

Obligatory courses number of ECTS points 28

No	Course/group	Name of course/group of courses (denote	Wee	kly 1	numb	er o	f hours	Field-of-study educational	Numbe	r of hours	Numb	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	practical5	kind ⁶	type ⁷
1	FZP1052C	General Physics		1				K1INF_W03	15	60	2	1,2	Т	Z	0		PD	Ob.
2	FZP1052W	General Physics	2					K1INF_W03	30	90	3	1,8	Т	Е	0		PD	Ob.
3	MAP1070C	Elementary Linear Algebra		2				K1INF_W01	30	60	2	1,2	Т	Z	0		PD	Ob.
4	MAP1070W	Elementary Linear Algebra	2					K1INF_W01	30	90	3	1,8	Т	Е	0		PD	Ob.
5	MAP1043C	Mathematical Analysis I		2				K1INF_W01	30	60	2	1,2	Т	Z	0		PD	Ob.
6	MAP1043W	Mathematical Analysis I	2					K1INF_W01	30	120	4	2.4	Т	Е	0		PD	Ob
7	INZ0250Wl	Introduction to Programming (GK)	2		2			K1INF_W04, K1INF_U01, K1INF_U14	60	210	7	4,2	Т	Z		(3)	PD	Ob.
8	INZ0251Wc	Introduction to Computer Systems (GK)	2	1				K1INF_W08	45	150	5	3,0	Т	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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

No.	. Course/group of courses	Name of course/group of courses (denote group of courses with	Wee	ekly	numbe	er of l		Field-of-study educational	h	nber of ours	Numb	per of ECTS points	Form ² of course/group	~	0	oup of cou	rses	
	code	symbol GK)	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		KO	W
		Total		4					60	60	2	1,2						

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

Altogether in semester

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

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

Obligatory courses number of ECTS points 25

No.	. Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	W		ly n f hou	umber 11s	Field-of-study educational effect symbol	Number o	f hours		umber of TS points	Form ² of course/group			group of	course	28
	code		lec	cl	lab	pr sem		ZZU	CNPS	total	BK classes ¹	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	Р	PD	Ob
2	MAP2005C	Mathematical Analysis II		2			K1INF_W01	30	90	2	1,2	Т	Z	0		PD	Ob
3	MAP2005W	Mathematical Analysis II	2				K1INF_W01	30	120	4	2,4	Т	Е	0		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	INZ0253Wl	Computer Architecture and Organization (GK)	2		2		K1INF_W08, K1INF_U06, K1INF_U14	60	150	6	3,6	Т	E		(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	E		(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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

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

No	0	Course/group of	Name of course/group of courses	Wee	kly nun	ber c	f hours				Number of l	ECTS points		Way ³ of		group of c	ourses	
		courses code	(denote group of courses with symbol GK)	lec	cl lat	pr	sem	educational effect symbol	ZZU	CNPS	total	BK classes ¹	course/group of courses	crediting	university- wide ⁴	practical5	kind ⁶	type ⁷
1	1 J	ZL100400BK	JĘZ.OBCE- STACJ.WSZYSTKIE		4			K1INF_U17	60	90	3	1,8	Т	E	0		KO	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	V	Veek	ly nu hou	ımbe rs	r of	Field-of-study educational effect		ber of ours		mber of IS points	Form ² of course/group of	Way ³ of crediting	Course/g	group of c	ourse	8
		GK)	lec	cl	lab	pr	sem	symbol	ZZU	CNPS	total	BK classes ¹	courses		university- wide ⁴	practical5	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	Т	Z			K	W
		Total					2		30	60	2	1,2						

Altogether in semester

	Тс	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	8	5		2	345	900	30	18

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

Obligatory courses number of ECTS points 29

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)		ĥ	ours			Field-of-study educational effect symbol	he	nber of ours		ber of ECTS points	Form ² of course/group			group of o		
	code		lec	cl la	ıb p	r sen	n		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical	⁵ kind	⁶ type ⁷
1	INZ0255C	Theory of Information and Signals		2				K1INF_W11,	30	60	2	1,2	Т	Z			K	Ob
								K1INF_U07										
2	INZ0255W	Theory of Information and Signals	2					K1INF_W11	30	120	4	2,4	Т	Е			K	Ob.
3	INZ0256L	Electronics and Metrology – basic principle		2	2			K1INF_W07, K1INF_U14	30	60	2	1,2	Т	Z		Р	PD	Ob.
4	INZ0257C	Theory of Probabilistic and Statistics		2				K1INF_W02	30	60	2	1,2	Т	Z			PD	Ob.
5	INZ0257W	Theory of Probabilistic and Statistics	2					K1INF_W02	30	90	4	2,4	Т	Е			PD	Ob.
6	INZ0258C	Logics and Discrete Mathematics		2				K1INF_W02, K1INF_W17	30	90	3	1,8	Т	Z			PD	Ob
7	INZ0258W	Logics and Discrete Mathematics	2					K1INF_W02, K1INF_W17	30	90	3	1,8	Т	Е			PD	Ob
8	INZ0259Wcl	Databases (GK)	2	1	l			K1INF_W07, K1INF_W16	60	150	5	3,0	Т	Е		(2)	Κ	Ob
								K1INF_W22										
								K1INF_U19,										
							K1	1INF_U04, K1INF_U09, K1INF_U14										
9	INZ00260W1	Object-Oriented Programming (GK)	2	1	2			K1INF_U02, K1INF_U14	60	150	4	2,4	Т	Z		(2)	K	Ob.
								K1INF_W05, K1INF_W06										
		Total	10	7 5	5	1			330	870	29	17,4					1	1

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

Ν	No	Course/group of	Name of course/group of courses	Week	ly n	umbe	r of ł	nours	Field-of-study	Numbe	r of hours	Numb	er of ECTS points	Form ² of	Way ³ 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	course/group of courses	crediting	university-wide ⁴	practical5	kind ⁶	type ⁷
	1	WFW000000BK	SPORT		2				K1INF_K08	30	30	1	0,6	Т	Z	0	Р	KO	W
			Total		2					30	30	1	0,6						

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

Altogether in semester

	Τc	otal number c	of hours				Total number of ECTS points	
lec	cl	lab	pr	sem				
10	9	5			360	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

 3 Exam – 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) 4 University-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 25

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)		kly 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	11a1	b pı	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ²	kind ⁶	type
1	INZ00297W	Systems analysis and decision support methods in Computer Science	2				K1INF_W15	30	90	3	1,8	Т	E			K	Ob
2	INZ00297c	Systems analysis and decision support methods in Computer Science	: 1	l			K1INF_U15, K1INF_U14	15	30	1	0,6	Т	Z			K	Ob
3	INZ002971	Systems analysis and decision support methods in Computer Science	,	1			K1INF_W15	15	30	1	0,6	Т	Z		Р	К	Ob
4	INZ0262W	Computer Networks and Communications	2				K1INF_W11	30	90	3	1,8	Т	Е			К	Ob
5	INZ02621	Computer Networks and Communications		2	r		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	l 1			K1INF_U03, K1INF_U14 K1INF_W07	60	150	5	3,0	Т	E		(2)	K	Ob
7	INZ0264W1	Operating Systems (GK)	2	2	r		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			K1INF_U04, K1INF_U06, K1INF_W09, K1INF_U14		150	5	3,0	Т	Z		(2)	K	Ob
		Total	10 2	2 8				300	750	25	15						\square

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

No	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	١		y num hours	ber of	Field-of-study educational effect symbol	Number	of hours		of ECTS ints	Form ² of course/grou p of courses	Way ³ of crediting		group of c	ourse	3
			lec	cl I	ab p	r sem		ZZU	CNPS	total	BK classes ¹			university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0266Wp	Database Design (GK)	2		2		K1INF_W07, K1INF_W16, K1INF_W22, K1INF_U03, K1INF_U04, K1INF_U09, K1INF_U16, K1INF_U19	60	150	5	3,0	Т	Z		(2)	К	w
2	INZ0267W1		2		2		K1INF_W07, K1INF_W16, K1INF_W22, K1INF_U03, K1INF_U04, K1INF_U09, K1INF_U16, K1INF_U19	60	150	5	3,0	Т	Z		(2)	К	W
		Total	2		2			60	150	5	3,0						

Optional courses (Optional module M_1: Database Programming) (minimum 60 hours in semester, 5 ECTS points)

Altogether in semester

	Тс	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				
12	2	8	2		360	900	30	18

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

Obligatory courses number of ECTS points 17

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol	V	Veek	ly n hou		er of	Field-of-study educational effect symbol	Number of	hours		nber of S points	Form ² of course/group		7	e/group of		
	code	GK)	lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university -wide ⁴	practical ⁵	kind ⁶	, type
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, K1INF_U16, K1INF_U14	60	150	5	3,0	Т	Z		(2)	К	Ob
								K1INF_W07, K1INF_W15										
3	INZ0298W	Computer Control Systems	1					K1INF_W15, K1INF_W21	15	30	2	1,2	Т	E			K	Ob
4	INZ02981	Computer Control Systems			2			K1INF_W07, K1INF_U15, K1INF_U18, K1INF_U14	30	90	2	1,2	Т	Z		Р	K	Ob
5	INZ0298p	Computer Control Systems				1		K1INF_W07, K1INF_U15, K1INF_U18, K1INF_K02	15	30	1	0,6	Т	Z		Р	K	Ob
6	INZ0270Wp	Software System Development (GK)	2			2		K1INF_U02, K1INF_U03, K1INF_U04, K1INF_U13, K1INF_U14, K1INF_W05 K1INF_W07	60	150	5	3,0	Т	Е		(2)	К	Ob.
		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

 3 Exam – 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) 4 University-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

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		ber of ours	Nun	ber of ECTS points	Form ² of course/group	2		group of c	ourses	;
	code		lec	cl	lab pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0271W1	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)	К	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	Т	Z		(2)	К	W
		Total	2		2			60	150	5	3,0						

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

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

No.	. Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	W		y numl hours	per of	Field-of-study educational effect symbol		ber of ours	Nur	nber of ECTS points	Form ² of course/group			e/group of c	ourses	5
	code		lec	cl	lab pr	sem		ZZU	CNPS	total	BK classes ¹	of courses	-	university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0273W1	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)	К	W
2	INZ0274W1	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)	К	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

_					J		0 / (/		,			
No	Course/group	Name of course/group of courses (denote group		Weel	2		Field-of-study educational effect	Num	ber of	Num	ber of ECTS		-		e/group of c	ourses	s
	of courses	of courses with symbol GK)	n	umbe		f	symbol	ho	urs		points	course/group	crediting				
	code		<u> </u>	hou	-						1	of courses			5		d 7
			lec	llab	prse	em		ZZU	CNPS	total	BK classes ¹			university-	practical	kind ^o	^b type'
														wide ⁴			
1	INZ0275W1	Software Project Management (GK)	2	1			K1INF_U10, K1INF_K02,	45	120	4	2,4	Т	Z		(2)	Κ	W
							K1INF_U14, K1INF_W18										
2	INZ0276Wls	Software Project Management Techniques	1	1		1	K1INF_U10, K1INF_K02,	45	120	4	2,4	Т	Z		(2)	Κ	W
		(GK)					K1INF_U14, K1INF_W18										
L	1	Total	1	1		1		45	120	4	2.4					+	+
		1500	-	1		1		15	120	т	2,4						

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

Altogether in semester

	Τc	otal number o	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				
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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

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)		ekly of ho	mber s	Field-of-study educational effect symbol	Numb hou			umber of TS points	Form ² of course/gro			group of	cours	es
	code			-	 sem	5		CNPS		-	up of courses		university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0277W1	Introduction to Parallel and Distributed Systems (GK)	2	1 1		K1INF_U04, K1INF_U14, K1INF_W12	60	150	5	3,0	Т	Е		(2)	K	Ob
2	INZ0278Wl	Computer Security (GK)	2	1 1		K1INF_U03, K1INF_U09, K1INF_U14, K1INF_W13	60	120	4	2,4	Т	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	Т	Е		(2)	K	Ob
		Total	6	2 4			180	390	13	7,8						

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

No		Name of course/group of courses (denote group of	Wee	-	umbe urs	er of		Field-of-study educational effect symbol	Number of				Form ² of course/group	Way ³ of		group of	cours	ses
	of courses code	courses with symbol GK)	lec	-	ab pr	sen	n	symbol	ZZU	CNPS	total	-	of courses	U	university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	INZ0280P	Preparatory Project			2			K1INF_K01, K1INF_K02, K1INF_K03, K1INF_K04, K1INF_K05, K1INF_U11, K1INF_U12, K1INF_U13	30	60	2	1,2	Т	Z		Р	K	W
2	INZ0281P	Team Project			4			K11NF_U02, K11NF_U05, K11NF_U06, K11NF_U10, K11NF_U12, K11NF_U13, K11NF_K01, K11NF_K03, K11NF_K04, K11NF_K05	60	150	5	3,0	Т	Z		Р	К	W
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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

No.	Course/group of courses	Name of course/group of courses (denote group of courses with	Weel	cly nu hou		er of	Field-of-study educational effect symbol		nber of ours	Nur	nber of ECTS points	Form ² of course/group		Course/g	roup of co	ourses	
	code		lec cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university- wide ⁴	practical5	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	INZ0283W1	System Administration (GK)	2	2			K1INF_W10, K1INF_W11, K1INF_U08,, K1INF_U09, K1INF_U14	60	150	5	3,0	Т	Z		(2)	K	W
		Total	2	2				60	150	5	3,0						

Optional courses (Optional module M_5: Network and computer systems) (minimum 60 hours in semester, 5 ECTS points)

Altogether in semester

	Τc	otal number o	of hours		Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

Obligatory courses number of ECTS points 4

No.	. Course/group of courses	Name of course/group of courses (denote group of courses with	Wee	kly nu hou		er of	Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of Way ³ of course/group crediting		0 1			3
	code		lec o	l lab	pr	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			K1INF_U06, 11NF_U07, K1INF_U14, K1INF_U05, K1INF_W14	60	120	4	2,4	Т	Z		(2)	К	Ob
		Total	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		Weekly number of hours		er of	Field-of-study educational effect symbol	Number	of hours	Number of ECTS points		Form ² of Way ³ of course/grou creditin		Course/gr	roup of co	ourses	
	code	symbol GK)	lec	el lab	pr	sem		ZZU	CNPS	total	BK classes ¹	p of courses	g	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			К	W
2	INZ0286p	Diploma Thesis			6		K1INF_K01, K1INF_K02, K1INF_K03, K1INF_K04, K1INF_K05, K1INF_U11, K1INF_U12, K1INF_U13	90	360	12	7,2	Т	Z		Р	К	W
<u> </u>		Total			6	2		120	420	14	8,4						

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

 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

No	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)		Week 1mbe hour	r of	Fi	ield-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	course	es
			lec c	llab	or sen	n		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	INZ0288W	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 (Humanistic subject II) (minimum 30 hours in semester, 2 ECTS points)

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

				0				1						· · · ·			
No.	Course/group	Name of course/group of courses (denote	Wee	kly n	uml	ber of	Field-of-study educational effect	Nun	nber of	Num	ber of ECTS	Form ² of	Way ³ of	Course/g	group of c	ourse	ŝ
	of courses	group of courses with symbol GK)	up of courses with symbol GK) hours symbol hours		, ,			course/group	crediting								
	code		lec o	l lat	p pr	sem		ZZU	CNPS	total	BK classes ¹	of courses		university-	practical5	kind ⁶	type ⁷
					1						Direlasses			wide ⁴	1	Rina	cype
1	IN/70290W/-1	Des services I an encode and Davidiants (CW)	2	1 1	-		KINE WOS KINE WOG	60	150	5	3,0		Z	mae	(2)	K	W
1	INZ0289 WCI	Programming Languages and Paradigms (GK)	2				K1INF_W05, K1INF_W06	00	150	3	5,0		L		(2)	к	vv
							K1INF_U02, K1INF_U14										
2	INZ0290W1	User Interface Development (GK)	2	2			K1INF_U06, K1INF_U07,	60	150	5	3,0	Т	Z		(2)	Κ	W
		-															1
							K1INF_U13, K1INF_W04										
3	INZ0291Wcl	Program Translation Techniques (GK)	2	1 1			K1INF U01, K1INF W06	60	150	5	3,0	Т	Z		(2)	Κ	W
5	11120291 0001	Tiogram Translation Teeninques (GR)	-					00	150	5	5,0	-	2		(2)		
				_	_												\square
4	INZ0292Wc	Numerical Methods (GK)	2	2			K1INF_U01, K1INF_W04	60	150	5	3,0	Т	Z		(2)	Κ	W
		Total	2	1 1				60	150	5	3,0				1		
			_					50		2	2,0						1

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 2 Traditional – enter T, remote – enter Z

 3 Exam – 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) 4 University-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

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol GK)	We	Weekly number of hours			Field-of-study educational effect symbol	Number	of hours	Nun	nber of ECTS points	Form ² of course/group	2	U	roup of co	ourses	
	code		lec	cl la	b pr	sem	, , , , , , , , , , , , , , , , , , ,	ZZU	CNPS	total		of courses	C		practical ⁵	kind ⁶	type ⁷
1	INZ0293Wl	E-Business Concept and Technologies (GK)	2	2	2		K1INF_U11, K1INF_W14,	60	150	5	3,0	Т	Z		(2)	K	W
							K1INF_W12, K1INF_K01										
							K1INF_K06										
2	INZ0294Wc	Theory of Computation (GK)	2	2			K1INF_K01, K1INF_W04	60	150	5	3,0	Т	Z			K	W
L	1	Total	2	1 1				60	150	5	3,0						

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

Altogether in semester

	Τc	otal number o	of hours		Total number of ZZU 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

 ${}^{3}Exam$ – 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) ${}^{4}University$ -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

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

 2 Traditional – enter T, remote – enter Z

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

 $^{{}^{3}}$ Exam – 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) 4 University-wide course /group of courses – enter O

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

 3 Exam – 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) 4 University-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