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: Computer Engineering

LANGUAGE OF STUDY: English

...... Faculty Council Resolution of .....

In effect since .....

\*delete as applicable

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

	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	
	900	30	900	30	900	30	900	30	
20	Foreign I	Language I					Research I	Methodology	20
	30	1 ECTS	Modelling and ana	alysis of Web-based	Elective	Course M3.1	90	3 ECTS	
19	Foreign L	anguage II	sys	tems					19
18	60	2 ECTS	180	6 ECTS	180	6 ECTS	Monograj	phic Subject	18
17	00	2 EC 15	180	OECIS			90	3 ECTS	17
16								ling and analysis	16
15	Advanced	l Databases	Derallal and Dist	ributed Computing	Flaativa	Course M3.2	90	3 ECTS	15
14	Auvanceu	Databases	Faranei and Dist	Touted Computing	Elective	Course M5.2	Diplom	a Seminar	14
13	210	7 ECTS	180	6 ECTS	180	6 ECTS	90	<b>3ECTS</b>	13
12	Advanced Top	pics in Artificial					90	SEC15	12
11	Intell	igence		1 Cartan		G			11
10	210	7 ECTS	Mobile and Mu	ltimedia Systems	Elective	Course M3.3			10
9	210		180	6 ECTS	180	6 ECTS	MSc 7	Thesis II	9
8	Information Sv	stems Modelling			Physics of Cont	emporary Computer	-		8
7	•	nalysis			S	cience			7
6	210		Software Syste	em Development	120	4 ECTS Sport	540	18 ECTS	6
0	210	7 ECTS	180	6 ECTS	15	<b>1 ECTS</b>			0
5						ew technologies			5
- 1	C ( ) ( 1 11				<u>60</u>	2 ECTS	_		
4	System Modell	ing and Analysis		of Knowledge neering		s of Business and ual Property			4
3	180	6 ECTS	Liigii		90	3 ECTS			3
2			180	6 ECTS		Thesis I			2
1					75	2 ECTS			1
sem		1		2		3		4	total
w/sem	20/	/300	20	/300	2	0/300	20	/300	80/1200

# 2) in hourly layout

	CNPS ECTS	CNPS ECTS	CNPS ECTS	CNPS ECTS	
	900 30	900 30	900 30	900 30	
20	Foreign Language I			Research Methodology	20
	01000	Modelling and analysis of Web-based	Elective Course M3.1	20000	
19	Foreign Language II	systems			19
18	03000	20200 E	4h E	Monographic Subject	18
17	05000	20200 E		10100	17
16				Business modeling and analysis	16
15	Advanced Databases	Parallel and Distributed Computing	Elective Course M3.1	11000	15
14	Advanced Databases	Paranel and Distributed Computing	Elective Course Mis.1	Diploma Seminar	14
13	10021		4h E		13
12	Advanced Topics in Artificial			00002	12
11	Intelligence				11
10		Mobile and Multimedia Systems	Elective Course M3.2		10
9	20020 E	10300	4h E	MSc Thesis	9
				_	
8	Information Systems Modelling and Analysis		Physics of Contemporary Computer Science		8
7	and Anarysis	Software System Development	10001	000(12)0	7
6	22000 E	20020	Sport 01000		6
5			Ethics of new technologies 00001	_	5
4		Foundations of Knowledge	Fundamentals of Business and	_	4
3	System Modelling and Analysis	Engineering	Intellectual Property <b>20000</b>		3
2		22000 E	MSc Thesis I		2
1	21001 E		00020		1
sem	1	2	3	4	total
w/sem	20/300	20/300	20/300	20/300	80/1200

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

#### Way<sup>3</sup> of No.. Course/group Name of course/group of courses Weekly number of hours Field-of-study educational Number of Number of ECTS Form<sup>2</sup> of Course/group of courses effect symbol course/group crediting hours points (denote group of courses with of courses of courses lec ZZU CNPS total practical<sup>5</sup> kind<sup>6</sup> type<sup>7</sup> symbol GK) cl lab BK classes universitycode pr sem wide<sup>4</sup> INZ0108Wcs System Modelling and Analysis K2INF\_W01 Е PD Ob. 2 1 60 180 6 3,6 Т (2)1 K2INF W05 (GK) K2INF\_U05 K Ob. INZ0109Wps Advanced databases (**GK**) 2 K2INF\_W05 7 4,2 Т Ζ 2 1 1 60 210 (3) K2INF U05 3 INZ0110Wp Advanced Topics in Artificial 2 2 K2INF\_W06 4.2 Т Е S Ob. 60 210 7 (3) K2INF\_U08 Intelligence (GK) INZ0113Wc Information System Modelling and Ob. 4 2 2 K2INF W04 60 210 7 4,2 Т Е Κ Analysis (GK) Total 7 3 4 2 240 810 27 16,2

#### **Obligatory courses number of ECTS points 28**

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

No	Course/group of courses	Name of course/group of courses (denote group of courses with	We	ekly	numb	er of	Field-of-study educational	h	nber of ours		per of ECTS points	Form <sup>2</sup> of course/group	2	U	oup of cou	rses	
	code	symbol <b>GK</b> )	lec cl lab pr sem effect symbol ZZU CNPS total		BK classes <sup>1</sup>	of courses		university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>						
1		Foreign language I		3			K2INF_U04	45	60	2	1,2	Т	Z	0		КО	W
2		Foreign language II		1			K2INF_U04	15	30	1	0.6	Т	Z	0		KO	W.
		Total		4				60	90	3	1,8						

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

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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) <sup>4</sup>University-wide course /group of courses – enter O

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

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

#### Altogether in semester

	To	otal number o	f hours		Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes <sup>1</sup>
lec	cl	lab	pr	sem				
7	7	0	4	2	300	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

<sup>&</sup>lt;sup>3</sup>Exam – enter T, renote – enter Z <sup>3</sup>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) <sup>4</sup>University-wide course /group of courses – enter O <sup>5</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses <sup>6</sup> KO – general education, PD – basic sciences, K – field-of-studies, S – specialization <sup>7</sup> Optional – enter W, obligatory – enter Ob

## Semester 2

### **Obligatory courses number of ECTS points 30**

No	Course/group of courses	Name of course/group of courses (denote group of courses with symbol	Weel	kly n	umbe	er of	hours	Field-of-study educational effect symbol		of hours		r of ECTS pints	course/group	Way <sup>3</sup> of crediting		/group of	cours	es
	code	GK)	lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>	of courses		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1		Modelling and Analysis of Web-based Systems ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U07, K2INF_U08 K2INF_U09	60	180	6	3,6	Т	E		(3)	S	Ob.
2		Parallel and Distributed Computing (GK)	2	1	1			K2INF_W06, K2INF_U07, K2INF_U08 K2INF_U09	60	180	6	3,6	Т	E		(2)	S	Ob.
3	INZ0137Wl	Mobile and Multimedia Systems (GK)	1		3			K2INF_W06, K2INF_U07, K2INF_U08 K2INF_U09	60	180	6	3,6	Т	Z		(4)	S	Ob.
4	INZ0138Wp	Software System Development (GK)	2			2		K2INF_W04 K2INF_U07,	60	180	6	3,6	Т	Z		(3)	K	Ob.
5		Foundation of Knowledge Engineering (GK)	2	2				K2INF _W02, K2INF _U05 K2INF _U05	60	180	6	3,6	Т	E			K	Ob.
		Total	9	3	6	2			300	900	30	18						

#### Altogether in semester

Total number of hours	Total number of	Total number of CNPS		Number of ECTS points for BK
	ZZU hours	hours	points	classes <sup>1</sup>

<sup>1</sup>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

<sup>5</sup>Practical 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

lec	cl	lab	pr	sem				
9	3	6	2	0	300	900	30	18

## Semester 3

#### **Obligatory courses number of ECTS points 10**

No.	. Course/group of courses	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	We	eekly n	umber	of hour		Field-of-study educational effect symbol		of hours		er of ECTS points	Form <sup>2</sup> of course/group	~		/group of	cours	es
	code		lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>	of courses		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1		Physics of Contemporary Computer Science (GK)	1				1	K2INF_W01	30	120	4	2,4	Т	Z			S	Ob.
2	INZ0166S	Ethics of new technologies					1	K2INF_W07 K2INF_K03	15	60	2	1,2	Т	Z			S	Ob.
		Fundamentals of Business and Intellectual Property	2					K2INF_W08	30	90	3	1,8	Т	Z				
		Spotr		1				K2INF_K04	15	15	1	0,6	Т	Z			КО	Ob.
		Total	3	1			2		90	285	10	6						

#### **Optional courses (minimum 30 hours in semester, 2 ECTS point)**

No	Course/group of	Name of course/group of courses	Week	cly nu	umber	of h	ours	Field-of-study	Numbe	r of hours	Numb	per of ECTS points		Way <sup>3</sup> of	0	oup of cou	rses	
	courses code	(denote group of courses with symbol <b>GK</b> )	lec	cl	lab	pr		educational effect symbol	ZZU	CNPS	total	BK classes <sup>1</sup>	course/group of courses	crediting	university-wide <sup>4</sup>	practical5	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0142P	MSc Thesis I				2		K2INF_U03,	30	75	2	1,2	Т	Z		Р	S	W.

<sup>1</sup>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

<sup>5</sup>Practical 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

				K2INF_U08							
	Total		2		30	75	2	1,2			

				< <u> </u>		-	, , , , , , , , , , , , , , , , , , , ,		Points	/							
No	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )		Veek	ly numb hours	er of	Field-of-study educational effect symbol	Numbe	r of hours			Form <sup>2</sup> of course/grou p of courses	-		group of c	ourses	3
	code	· · · · · · · · · · · · · · · · · · ·	lec	cl	lab pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>	1		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0158Wcs	Parallel Computer Architecture (GK)	2	1		1	K2INF_W06,	60	180	6	4,2	Т	Е			S	W.
2	INZ0159W1	Advanced Computer Network (GK)	2		2		K2INF_W06, K2INF_U09	60	180	6	4,2	Т	E		(3)	S	W
		Total	2	1	1			60	180	6	4,2						

#### **Optional courses (Optional module M\_3.1) (minimum 60 hours in semester, 6 ECTS points)**

#### Optional courses (Optional module M\_3.2) (minimum 60 hours in semester, 6 ECTS points)

No.	Course/group of courses	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Wee	kly nu	mbe	r of l	hours	Field-of-study educational effect symbol		ber of ours	Num	ber of ECTS points	Form <sup>2</sup> of course/group	2		group of o	course	×S
	code		lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>	of courses		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0160Wl	Advanced Computer Graphic (GK)	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E		(3)	S	W.
2	INZ0161W1	Digital Image Processing (GK)	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E		(3)	S	W

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

<sup>2</sup>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

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

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

3	INZ0162W1	Multimedia Information Systems (GK)	2	2	K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E	(3)	S	W
4	INZ0163Wl	User Interface Development ( <b>GK</b> )	2	2	K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E	(3)	S	W
		Total	2	2		60	180	6	4,2					

#### Optional courses (Optional module M\_3.3) (minimum 60 hours in semester, 6 ECTS points)

No.	Course/group of courses	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Week	ly nu hou		er of	Field-of-study educational effect symbol		ber of ours	Num	ber of ECTS points	Form <sup>2</sup> of course/group			group of c	course	s
	code		lec cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>	of courses		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0164Wlp	Data Warehouses (GK)	1	2	1		K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E		(3)	S	W.
2	INZ0165W1	Expert Systems (GK)	2	2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	Т	E		(3)	S	W
		Total	2	2				60	180	6	4,2						

#### Altogether in semester

	Τc	otal number o	of hours		Total number of ZZU hours	Total number of CNPS hours		Number of ECTS points for BK classes <sup>1</sup>
lec	cl	lab	pr	sem				
8	1	5	2	4	300	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

<sup>3</sup>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) <sup>4</sup>University-wide course /group of courses – enter O

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

## Semester 4

### **Obligatory courses number of ECTS points 6**

N	lo	Course/group of courses	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	,	Weekly	y numł	er of hou	ırs	Field-of-study educational effect symbol					Form <sup>2</sup> of course/group	2		/group of	cours	es
		code		lec	cl	lab	pr	sem		ZZU	CNPS		BK classes <sup>1</sup>	of courses		university- wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
	1	INZ0151W	Research Methodology	2					K2INF_W05	30	90	3	1,8	Т	Z			К	Ob.
	2	INZ0152Wc	Business modeling and analysis (GK)	1	1				K2INF _W03, K2INF _U06	30	90	3	1,8	Т	Z			К	Ob.
			Total	3	1					60	180	6	3,6						

#### **Optional courses (minimum 240 hours in semester, 24 ECTS points)**

No	. Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	V	Veek	ly nur hours		r of	Field-of-study educational effect symbol	Number	of hours			Form <sup>2</sup> of course/grou p of courses	Way <sup>3</sup> of crediting		group of c	ourse	3
		0)	lec	cl	lab j	or	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university- wide <sup>4</sup>	practical5	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0153Wl	Monographic Subject ( <b>GK</b> )	1		1			K2INF_U08, K2INF_W06 K2INF_U09	30	90	3	1,8	Т	Z		(1)	S	W
2	INZ0154S	Diploma Seminar	0				2	K2INF_U01, K2INF_U02 <mark>K2INF_K02</mark>	30	90	3	1,8	Т	Z			S	W
3	INZ0155D	MSc Thesis II	0		1	2		K2INF_U03, K2INF_U08 <mark>K2INF_K01</mark>	180	540	18	10,8	Т	Z		Р	S	W
	-	Total	1		1 1	2	2		240	720	24	14,4						

<sup>1</sup>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

<sup>5</sup>Practical 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

#### Altogether in semester

		1	Fotal number	r of hours		Total number of ZZU hours	Total number of CNPS hours		Number of ECTS points for BK classes <sup>1</sup>
	lec	cl	lab	pr	sem				
4		1	1	12	2	300	900	30	18

#### Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
INZ0110	1. Advanced Topics in Artificial Intelligence	1
INZ0113	2. Information System Modeling and Analysis	
INZ0108	3. System Modelling and Analysis	
INZ0135	1. Modelling and Analysis of Web-based Systems	2
INZ0136	2. Parallel and Distributed Computing	
INZ0139	3. Foundation of Knowledge Engineering	
INZxxx	1. Elective Course M3.1	3
INZxxx	2. Elective Course M3.2	
INZxxx	3. Elective Course M3.3	

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

Semester	Allowable deficit
	of ECTS points

<sup>1</sup>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

<sup>5</sup>Practical 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

	after semester
1	7
2	13
3	0

Opinion of student government legislative body

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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

<sup>5</sup>Practical 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