

## **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 Language I		Modelling and analysis of Web-based systems		Elective Course M3.1	180	6 ECTS	Research Methodology	20						
	30	1 ECTS						90	3 ECTS	19					
19	Foreign Language II							Monographic Subject	18						
18	60	2 ECTS								180	6 ECTS	90	3 ECTS	17	
17															
16	Advanced Databases		Parallel and Distributed Computing		Elective Course M3.2	180	6 ECTS	Business modeling and analysis	16						
15								90	3 ECTS	15					
14								Diploma Seminar		14					
13											210	7 ECTS	180	6 ECTS	180
12	Advanced Topics in Artificial Intelligence		Mobile and Multimedia Systems		Elective Course M3.3	180	6 ECTS	MSc Thesis II	12						
11									11						
10									210	7 ECTS	180	6 ECTS	180	6 ECTS	9
9									9						
8	Information Systems Modelling and Analysis		Software System Development		Physics of Contemporary Computer Science	540	18 ECTS		8						
7					120				4 ECTS	7					
6					210				7 ECTS	180	6 ECTS	Sport	15	1 ECTS	6
5					60				2 ECTS	Ethics of new technologies	60	2 ECTS	5		
4	System Modelling and Analysis		Foundations of Knowledge Engineering		Fundamentals of Business and Intellectual Property	75	2 ECTS			4					
3					180					6 ECTS	180	6 ECTS	90	3 ECTS	3
2					MSc Thesis I					75	2 ECTS	2			
1												1			
sem	1		2		3		4			total					
w/sem	20/300		20/300		20/300		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	Modelling and analysis of Web-based systems	Elective Course M3.1	Research Methodology	20					
	01000									
19	Foreign Language II									
18	03000									
17		Parallel and Distributed Computing	Elective Course M3.1	Monographic Subject	18					
16	Advanced Databases									
15						10100				
14						11000				
13		10021	Diploma Seminar	14						
12	Advanced Topics in Artificial Intelligence	Elective Course M3.2			MSc Thesis					
11						Mobile and Multimedia Systems	000(12)0			
10								Physics of Contemporary Computer Science	10001	
9			Software System Development	20020						Sport
8	Information Systems Modelling and Analysis	22000 E			Ethics of new technologies					
7										
6										
5										
4	System Modelling and Analysis	Foundations of Knowledge Engineering	Fundamentals of Business and Intellectual Property	20000	4					
3						21001 E	MSc Thesis I	00020		
2										
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

### Obligatory courses number of ECTS points 28

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0108Wcs	System Modelling and Analysis ( <b>GK</b> )	2	1			1	K2INF_W01 K2INF_W05 K2INF_U05	60	180	6	3,6	T	E		(2)	PD	Ob.
2	INZ0109Wps	Advanced databases ( <b>GK</b> )	1			2	1	K2INF_W05 K2INF_U05	60	210	7	4,2	T	Z		(3)	K	Ob.
3	INZ0110Wp	Advanced Topics in Artificial Intelligence ( <b>GK</b> )	2			2		K2INF_W06 K2INF_U08	60	210	7	4,2	T	E		(3)	S	Ob.
4	INZ0113Wc	Information System Modelling and Analysis ( <b>GK</b> )	2	2				K2INF_W04	60	210	7	4,2	T	E			K	Ob.
Total			7	3		4	2		240	810	27	16,2						

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

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			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	T	Z	O		KO	W
2		Foreign language II		1				K2INF_U04	15	30	1	0.6	T	Z	O		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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

## Altogether in semester

Total 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 <sup>1</sup>
lec	cl	lab	pr	sem				
7	7	0	4	2	300	900	30	18

<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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

## Semester 2

### Obligatory courses number of ECTS points 30

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0135Wl	Modelling and Analysis of Web-based Systems ( <b>GK</b> )	2		2			K2INF_W06, <b>K2INF_U07</b> , K2INF_U08 K2INF_U09	60	180	6	3,6	T	E		(3)	S	Ob.
2	INZ0136Wcl	Parallel and Distributed Computing ( <b>GK</b> )	2	1	1			K2INF_W06, <b>K2INF_U07</b> , K2INF_U08 K2INF_U09	60	180	6	3,6	T	E		(2)	S	Ob.
3	INZ0137Wl	Mobile and Multimedia Systems ( <b>GK</b> )	1		3			K2INF_W06, <b>K2INF_U07</b> , K2INF_U08 K2INF_U09	60	180	6	3,6	T	Z		(4)	S	Ob.
4	INZ0138Wp	Software System Development ( <b>GK</b> )	2			2		K2INF_W04 <b>K2INF_U07</b> ,	60	180	6	3,6	T	Z		(3)	K	Ob.
5	INZ0139Wc	Foundation of Knowledge Engineering ( <b>GK</b> )	2	2				K2INF_W02, K2INF_U05 K2INF_U05	60	180	6	3,6	T	E			K	Ob.
Total			9	3	6	2			300	900	30	18						

### Altogether in semester

Total 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 <sup>1</sup>
-----------------------	---------------------------	----------------------------	-----------------------------	---

<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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

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 code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0156Ws	Physics of Contemporary Computer Science (GK)	1				1	K2INF_W01	30	120	4	2,4	T	Z			S	Ob.
2	INZ0166S	Ethics of new technologies					1	K2INF_W07 <b>K2INF_K03</b>	15	60	2	1,2	T	Z			S	Ob.
	INZ0167W	Fundamentals of Business and Intellectual Property	2					K2INF_W08	30	90	3	1,8	T	Z				
	.....	Spotr		1				K2INF_K04	15	15	1	0,6	T	Z			KO	Ob.
Total			3	1			2		<b>90</b>	<b>285</b>	<b>10</b>	6						

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

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0142P	MSc Thesis I				2		K2INF_U03,	30	<b>75</b>	2	1,2	T	Z		P	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

<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

							K2INF_U08										
		Total				2			30	75	2	1,2					

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

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0158Wcs	Parallel Computer Architecture ( <b>GK</b> )	2	1			1	K2INF_W06,	60	180	6	4,2	T	E			S	W.
2	INZ0159Wl	Advanced Computer Network ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U09	60	180	6	4,2	T	E		(3)	S	W
		Total	2	1	1				60	180	6	4,2						

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

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0160Wl	Advanced Computer Graphic ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	T	E		(3)	S	W.
2	INZ0161Wl	Digital Image Processing ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	T	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

<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



3	INZ0162Wl	Multimedia Information Systems ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	T	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	T	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 code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0164Wlp	Data Warehouses ( <b>GK</b> )	1		2	1		K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	T	E		(3)	S	W.
2	INZ0165Wl	Expert Systems ( <b>GK</b> )	2		2			K2INF_W06, K2INF_U08 K2INF_U09	60	180	6	4,2	T	E		(3)	S	W
Total			2		2				60	180	6	4,2						

### Altogether in semester

Total 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 <sup>1</sup>
lec	cl	lab	pr	sem				
8	1	5	2	4	300	900	30	18

<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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

## Semester 4

### Obligatory courses number of ECTS points 6

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			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	T	Z			K	Ob.
2	INZ0152Wc	Business modeling and analysis ( <b>GK</b> )	1	1				K2INF_W03, K2INF_U06	30	90	3	1,8	T	Z			K	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> )	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form <sup>2</sup> of course/group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes <sup>1</sup>			university-wide <sup>4</sup>	practical <sup>5</sup>	kind <sup>6</sup>	type <sup>7</sup>
1	INZ0153W1	Monographic Subject ( <b>GK</b> )	1		1			K2INF_U08, K2INF_W06 K2INF_U09	30	90	3	1,8	T	Z		(1)	S	W
2	INZ0154S	Diploma Seminar	0				2	K2INF_U01, K2INF_U02 <b>K2INF_K02</b>	30	90	3	1,8	T	Z			S	W
3	INZ0155D	MSc Thesis II	0			12		K2INF_U03, K2INF_U08 <b>K2INF_K01</b>	180	540	18	10,8	T	Z		P	S	W
Total			1		1	12	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

<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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

### Altogether in semester

Total 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 <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 INZ0113 INZ0108	1. Advanced Topics in Artificial Intelligence 2. Information System Modeling and Analysis 3. System Modelling and Analysis	1
INZ0135 INZ0136 INZ0139	1. Modelling and Analysis of Web-based Systems 2. Parallel and Distributed Computing 3. Foundation of Knowledge Engineering	2
INZxxx INZxxx INZxxx	1. Elective Course M3.1 2. Elective Course M3.2 3. Elective Course M3.3	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

<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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

	after semester
1	7
2	13
3	0

Opinion of student government legislative body

.....

Date Name and surname, signature of student representative

.....

Date Dean's signature

<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

<sup>7</sup> Optional – enter W, obligatory – enter Ob