PLAN OF STUDIES

FACULTY:.FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

MAIN FIELD OF STUDY: COMPUTER SCIENCE

EDUCATION LEVEL: 1st / ~~2nd * level~~, ~~licencjat~~ / inżynier / ~~magister~~ / ~~magister inżynier*~~

FORM OF STUDIES: full-time / part-time*

PROFILE: general academic /~~practical *~~

SPECIALIZATION: NO SPECIALIZATIONS

LANGUAGE OF STUDY: ENGLISH

Faculty Council Resolution of 29.05.2018
In effect since 01.10.2018

*delete as applicable

Plan of studies structure (optionally)

1) in point layout; *practical training after VI semester, 5 ECTS + 160 h CNPS added to the balance of semester VI, Mi – modules of optional courses; 1 course to choose*

Semester I (CNPS / ECTS)

Course	CNPS	ECTS
General Physics I	120	4 (2+2)
Computer System Organization	90	3 (2+1)
Structural and Object oriented Programming	180	6 (2+2+2)
Logics for IT Specialists	150	5 (3+2)
Algebra and Analytic Geometry	180	6 (3+3)
Mathematical Analysis I	180	6 (3+3)
Total I	**900**	**30 (24/360)**

Semester II

Course	CNPS	ECTS
General Physics II	180	6 (3+1+2)
Computer Architecture	120	4 (2+2)
Data Structures and Algorithms	180	6 (2+2+2)
Operating Systems	120	4 (2+2)
Discrete Mathematics	150	5 (2+3)
Mathematical Analysis II	150	5 (3+2)
Total II	**900**	**30 (24/360)**

Semester III

Course	CNPS	ECTS
Sports	30	0
English I	60	2
Basics of entrepreneurship	60	2
Computer Networks	200	7 (4+3)
Effective Programming Techniques	150	5 (2+3)
Programming Paradigms	200	7 (3+2+2)
Theory of Probabilistic and Statistics	200	7 (4+3)
Total III	**900**	**30 (25/375)**

Semester IV

Course	CNPS	ECTS
English II	90	3
M1 – Administration of Computer	120	4 (2+2)
Systems Analysis and Decision Support	210	7 (3+2+2)
Introduction to IoT	180	6 (3+3)
Data Bases	180	6 (2+2+2)
Basics of Software Engineering	120	4 (1+2+1)
Total IV	**900**	**30 (24/360)**

Semester V

Course	CNPS	ECTS
Presentation Techniques	60	2
M4 – Mobile Applications	120	4 (2+2)
M3 – Database design	120	4 (2+2)
M2 – Web Technologies	120	4 (2+2)
Cybersecurity	150	5 (3+2)
Script Langugages	150	5 (2+3)
Software Engineering	180	6 (3+3)
Total V	**900**	**30 (25/375)**

Semester VI

Course	CNPS	ECTS
M8 – Multimedia	120	4 (2+2)
M7 – Programming Tools and Technologies	110	4 (2+2)
M6 – Distributed Systems	120	4 (2+2)
M5 – Project Management Basics	90	3 (1+1+1)
Data Warehouses	150	5 (2+3)
Artificial Intelligence and Knowledge Engineering	150	5 (2+3)
Total VI	**900**	**30 (24/360)**

Semester VII

Course	CNPS	ECTS
M10 – Humanistic subject	90	3
M9 – Current Trends in Computer Science	120	4 (2+2)
Team Project	420	14
IT Social and Professional Problems	60	2
Diploma Seminar	60	2
Diploma Thesis	150	5
Total VII	**900**	**30 (19/285)**

Total: 165/2475

2) in hourly layout

[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

[5] 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

[7] Optional – enter W, obligatory – enter Ob

27	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	
26	900	30	900	30	900	30	900	30	900	30	900	30	900	30	
25					Sports **02000**				Presentation Techniques **00002**						
24	General Physics I **21000**		General Physics II **21100 E**				English II **04000**				M8 - Multimedia **20200 E**				
23					English I **04000**				M4 – Mobile applications **20200**						
22															
21	Computer System Organization **21000**		Computer Architecture **20200**				M1 - Administration of Computer **20200**				M7 – Programming Tools and Technologies **20200**		M10 - Humanistic subject **20000**		
20					Basics of entrepreneurship **20000**				M3 - Database design **10020**						
19															
18	Structural and Object oriented Programming **22200**														
17			Data Structures and Algorithms **21200 E**		Computer Networks **30200 E**		Systems Analysis and Decision Support **21100 E**		M2 – Web Technologies **20200**		M6 – Distributed Systems **20200**		M9 - Current Trends in Computer Science **20200**		
16															
15															
14															
13															
12	Logics for IT Specialists **22000 E**		Operating Systems **20200**		Effective Programming Techniques **10200**		Introduction to IoT **20200 E**		Cybersecurity **20200 E**		M5 - Project Management Basics **10201**		Team Project **00060**		
11															
10															
9															
8	Algebra and Analytic Geometry **22000 E**		Discrete Mathematics **22000**		Programming Paradigms **21200 E**		Data Bases **21100 E**		Script Languages **20200 E**		Data Warehouses **20200 E**		IT Social and Professional Problems **20000**		
7															
6															
5														Diploma Seminar **00002**		
4	Mathematical Analysis I **22000 E**		Mathematical Analysis II **21000 E**		Theory of Probabilistic and Statistics **22000 E**		Basics of Software Engineering **12100**		Software Engineering **20020 E**		Artificial Intelligence and Knowledge Engineering **20200 E**		Diploma Thesis **00030**		
3															
2															
1															
	I		II		III		IV		V		VI		VII		Total
	24/360		24/360		25/375		24/360		25/375		24/360		19/285		165/2475

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

Semester 1

Obligatory courses number of ECTS points 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

[5]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

[7] Optional – enter W, obligatory – enter Ob

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Structural and Object oriented Programming			2			K1INF_W04 K1INF_U01 K1INF_U02	30	60	2	1,2	T	Z		P (2)	PD	Ob.
		Total			2				30	60	2	1,2				2		

Groups of 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 **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Computer System Organization (GK)	2	1				K1INF_W07	45	90	3	1,8	T	Z (w)			PD	Ob
2.		Structural and Object oriented Programming (GK)	2	2				K1INF_W04 K1INF_U01 K1INF_U02	60	120	4	2,4	T	E (w)			PD	Ob
3.		Logic for IT Specialists (GK)	2	2				K1INF_W02	60	150	5	3	T	E (w)			K	Ob.
4.		General Physics I (GK)	2	1				K1INF_W03	45	120	4	2,4	T	Z (w)	O		PD	Ob.
5.		Algebra and Analytic Geometry (GK)	2	2				K1INF_W01	60	180	6	3,6	T	E (w)	O		PD	Ob.
6.		Mathematical Analysis I (GK)	2	2				K1INF_W01	60	180	6	3,6	T	E (w)	O		PD	Ob.
		Total	12	10					330	840	28	16,8						

[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
[5]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
[7] 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[1]
lec	cl	lab	pr	sem				
12	10	2			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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Semester 2

Obligatory courses number of ECTS points 12

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Data Structures and Algorithms			2			K1INF_W04 K1INF_U01	30	60	2	1,2	T	Z		P (2)	K	Ob.
2.		Computer Architecture	2					K1INF_W07 K1INF_U06	30	60	2	1,2	T	Z			K	Ob.
3.		Computer Architecture			2			K1INF_W07 K1INF_U06	30	60	2	1,2	T	Z		P (2)	K	Ob.
4.		General Physics II			1			K1INF_W03	15	60	2	1,2	T	Z	O	P (2)	PD	Ob.
5.		Operating Systems	2					K1INF_W09 K1INF_U07	30	60	2	1,2	T	Z			K	Ob.
6.		Operating Systems			2			K1INF_W09 K1INF_U07	30	60	2	1,2	T	Z		P (2)	K	Ob
		Total	4		7				165	360	12	7,2					8	

Groups of obligatory courses number of ECTS points 18

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Data Structures and Algorithms (GK)	2	1				K1INF_W04 K1INF_U01	45	120	4	2,4	T	E (w)			K	Ob
2.		General Physics II (GK)	2	1				K1INF_W03	45	120	4	2,4	T	E (w)	O		PD	Ob
3.		Discrete Mathematics (GK)	2	2				K1INF_W02	60	150	5	3	T	Z (w)			PD	Ob
4.		Mathematical Analysis II (GK)	2	1				K1INF_W01	45	150	5	3	T	E (w)	O		PD	Ob
		Total	8	5					195	540	18	10,8						

[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
[5]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
[7] 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[1]
lec	cl	lab	pr	sem				
12	5	7			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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Semester 3

Obligatory courses number of ECTS points 16

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Basics of Entrepreneurship	2					K1INF_W20	30	60	2	1,2	T	Z			KO	Ob
2.		Computer Networks	3					K1INF_W10 K1INF_U08	45	110	4	2,4	T	E			K	Ob.
3.		Computer Networks			2			K1INF_W10 K1INF_U08	30	90	3	1,8	T	Z		P (3)	K	Ob.
4.		Effective Programming Techniques	1					K1INF_W04 K1INF_U01	15	60	2	1,2	T	Z			K	Ob.
5.		Effective Programming Techniques			2			K1INF_W04 K1INF_U01	30	90	3	1,8	T	Z		P (3)	K	Ob.
6.		Programming paradigms			2			K1INF_W05 K1INF_U02	30	60	2	1,2	T	Z		P (2)	K	Ob.
		Total	6		6				180	470	16	9,6						

Groups of obligatory courses number of ECTS points 12

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Programming paradigms (GK)	2	1				K1INF_W05 K1INF_U02	45	140	5	3	T	E (w)			K	Ob.
2.		Theory of Probabilistic and Statistics (GK)	2	2				K1INF_W02	60	200	7	4,2	T	E (w)			PD	Ob.
		Total	4	3					105	340	12	7,2						

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

No..	Course/group of courses	Name of course/group of courses (denote group of courses with symbol	Weekly number of hours					Field-of-study	Number of hours		Number of ECTS points		Form[2] of course/group	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]

[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

[5]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

[7] Optional – enter W, obligatory – enter Ob

	code	**GK**)					educational effect symbol					of courses					
1.		English I	2				K1INF_U17	30	60	2	1,2	T	Z	O		KO	W
2.		Sports	2					30	30	0	0	T	Z	O		KO	W
		Total	4					60	90	2	1,2						

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[1]
lec	cl	lab	pr	sem				
10	7	6			375	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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Semester 4

Obligatory courses number of ECTS points 11

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Data bases			1			K1INF_W13 K1INF_U03 K1INF_U04	15	60	2	1,2	T	Z		P (2)	K	Ob.
2.		Systems Analysis and Decision Support Methods			1			K1INF_W12 K1INF_U07	15	60	2	1,2	T	Z		P (2)	K	Ob.
3.		Introduction to IoT	2					K1INF_W04 K1INF_U01	30	90	3	1,8	T	E				Ob.
4.		Introduction to IoT			2			K1INF_W04 K1INF_U01	30	90	3	1,8	T	Z		P (3)	K	Ob.
5.		Basics of Software Engineering			1			K1INF_W06 K1INF_U03	15	30	1	0,6	T	Z		P (1)	K	Ob.
		Total	2		5				105	330	11	6,6						

Groups of obligatory courses number of ECTS points 12

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Data bases (GK)	2	1				K1INF_W13 K1INF_U03 K1INF_U04	15	60	2	1,2	T	Z		P (2)	K	Ob.
2.		Systems Analysis and Decision Support Methods (GK)	2	1				K1INF_W12 K1INF_U07	45	150	5	3	E (w)	T			K	Ob.
3.		Basics of Software Engineering (GK)	1	2				K1INF_W06 K1INF_U03	45	90	3	1,8	Z (w)	T			K	Ob.
		Total	5	4					135	360	12	7,2						

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

[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

[5]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

[7] Optional – enter W, obligatory – enter Ob

No..	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		English II		4				K1INF_U17	60	90	3	1,8	T	Z	O		KO	W
		Total		4					60	90	3	1,8						

Groups of optional courses M1 - Administration of Computer Systems (minimum 60 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Linux server administration (GK)	2		2			K1INF_W09 K1IN_U21	60	120	4	2,4	T	Z (w)		P (2)	K	W
2.		Microsoft systems administration (GK)	2		2			K1INF_W09 K1IN_U21	60	120	4	2,4	T	Z (w)		P (2)	K	W
		Total	2		2				60	120	4	2,4						

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[1]
lec	cl	lab	pr	sem				
9	8	7			360	900	30	

Semester 5

Obligatory courses number of ECTS points 18

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]

[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
[5]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
[7] Optional – enter W, obligatory – enter Ob

No.		Course name					effect symbol										
1.		Presentation Techniques				2	K1INF_U12	30	60	2	1,2	T	Z			KO	Ob.
2.		Cybersecurity	2				K1INF_W11 K1INF_U09	30	90	3	1,8	T	E			K	Ob.
3.		Cybersecurity		2			K1INF_W11 K1INF_U09	30	60	2	1,2	T	Z		P (2)	K	Ob.
4.		Script Languages	2				K1INF_W04 K1INF_U01	30	60	2	1,2	T	E			K	Ob.
5.		Script Languages		2			K1INF_W04 K1INF_U01	30	90	3	1,8	T	Z		P (3)	K	Ob.
6.		Software Engineering	2				K1INF_W15 K1INF_U03 K1INF_U04 K1INF_K04	30	90	3	1,8	T	E			K	Ob.
7.		Software Engineering			2		K1INF_W15 K1INF_U03 K1INF_U04 K1INF_K04	30	90	3	1,8	T	Z		P (3)	K	Ob.
		Total	6	4	2	2		210	540	18	10,8				8		

Groups of optional courses M2 – Web Technologies (minimum 60 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Web systems programming (GK)	2		2			K1INF_W08 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	W
2.		.NET Web Applications (GK)	2		2			K1INF_W08 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	W
		Total	2		2				60	120	4	2,4				2		

Groups of optional courses M3 – Database Design (minimum 45 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Database Systems Engineering (GK)	1			2		K1INF_W15 K1INF_U03 K1INF_U04 K1INF_K03	45	120	4	2,4	T	Z (w)		P (2)	K	W
2.		Oracle Databases – programming (GK)	1			2		K1INF_W15 K1INF_U03 K1INF_U04 K1INF_K03	45	120	4	2,4	T	Z (w)		P (2)	K	W
3.		Database Design (GK)	1			2		K1INF_W15 K1INF_U03 K1INF_U04 K1INF_K03	45	120	4	2,4	T	Z (w)		P (2)	K	W
		Total	1			2			45	120	4	2,4				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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Groups of optional courses M4 – Mobile Applications (minimum 60 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Developing mobile applications for Android Platform (GK)	2		2			K1INF_W08 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	W
2.		Developing mobile applications for IOS Platform (GK)	2		2			K1INF_W08 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	W
		Total	2		2				60	120	4	2,4				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[1]
lec	cl	lab	pr	sem				
11		8	4	2	375	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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Semester 6

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 **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Artificial Intelligence and Knowledge Engineering	2					K1INF_W14 K1INF_U07	30	60	2	1,2	T	E			K	Ob.
2.		Artificial Intelligence and Knowledge Engineering			2			K1INF_W14 K1INF_U07	30	90	3	1,8	T	Z		P (3)	K	Ob.
3.		Data Warehouses	2					K1INF_W13 K1INF_U07	30	60	2	1,2	T	E			K	Ob.
4.		Data Warehouses			2			K1INF_W13 K1INF_U07	30	90	3	1,8	T	Z		P (3)	K	Ob.
		Total	4		4				120	300	10	6				6		

[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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Groups of optional courses M5 - Project Management Basics (minimum 60 hours in semester, 3 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Introduction to IT Project Management (GK)	1		2		1	K1INF_W18 K1INF_U10 K1INF_U11 K1INF_U12	60	90	3	1,8	T	Z (w)		P (1)	K	Ob.
2.		IT Project Management Support (GK)	1		2		1	K1INF_W18 K1INF_U10 K1INF_U11 K1INF_U12	60	90	3	1,8	T	Z (w)		P (1)	K	Ob
3.		Process - Based Management of IT Project (GK)	1		2		1	K1INF_W18 K1INF_U10 K1INF_U11 K1INF_U12	60	90	3	1,8	T	Z (w)		P (1)	K	Ob.
		Total	1		2		1		60	90	3	1,8				1		

Groups of optional courses M6 – Distributed Systems (minimum 60 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Distributed Computer System (GK)	2		2			K1INF_W08 K1INF_U11 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	Ob.
2.		Programming Microsoft Azure (GK)	2		2			K1INF_W08 K1INF_U11 K1INF_U18	60	120	4	2,4	T	Z (w)		P (2)	K	Ob
		Total	2		2				60	120	4	2,4				2		

Groups of optional courses M7 – Programming Tools and Technologies (minimum 60 hours in semester, 4 ECTS points)

[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
[5]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
[7] Optional – enter W, obligatory – enter Ob

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		.NET Software Development (GK)	2		2			K1INF_W17 K1INF_U20	60	110	4	2,4	T	Z (w)		P (2)	K	Ob.
2.		Computer Game Programming (GK)	2		2			K1INF_W17 K1INF_U20	60	110	4	2,4	T	Z (w)		P (2)	K	Ob
3.		Advanced Web Technologies (GK)	2		2			K1INF_W17 K1INF_U20	60	110	4	2,4	T	Z (w)		P (2)	K	Ob.
		Total	2		2				60	110	4	2,4				2		

Groups of optional courses M8 – Multimedia (minimum 60 hours in semester, 4 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Computer Graphics GK)	2		2			K1INF_W16 K1INF_U19	60	120	4	2,4	T	E (w)		P (2)	K	Ob.
2.		Programming Multimedia Applications (GK)	2		2			K1INF_W16 K1INF_U19	60	120	4	2,4	T	E (w)		P (2)	K	Ob
3.		Digital Media Processing Techniques (GK)	2		2			K1INF_W16 K1INF_U19	60	120	4	2,4	T	E (w)		P (2)	K	Ob.
		Total	2		2				60	120	4	2,4				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

[5]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

[7] 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[1]
lec	cl	lab	pr	sem				
11		12		1	360	900 (160 hours of practical training included)	30 (5 ECTS of practical training included)	18 (3 ECTS of practical training included)

[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

[5]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

[7] Optional – enter W, obligatory – enter Ob

Semester 7

Obligatory courses number of ECTS points 2

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		IT Social and Professional Problems	2					K1INF_W21 K1INF_K02	30	60	2	1,2	T	Z			KO	Ob.
		Total	2						30	60	2	1,2						

Optional courses (minimum 165 hours in semester, 21 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Team Project				6		K1INF_U05 K1INF_U14 K1INF_U16 K1INF_K01 K1INF_K03 K1INF_K04	90	420	14	8,4	T	Z		P (14)	K	W
2.		Diploma Seminar					2	K1INF_U11 K1INF_U12 K1INF_U13	30	60	2	1,2	T	Z			K.	W
3.		Diploma Thesis				3		K1INF_U05 K1INF_U11 K1INF_U13 K1INF_U15 K1INF_K01	45	150	5	3	T	Z		P (5)	K	W
		Total				9	2		165	630	21	12,6				19		

Groups of optional courses M9 – Current trends in Computer Science (minimum 60 hours in semester, 4 ECTS points)

[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
[5]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
[7] Optional – enter W, obligatory – enter Ob

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Data Science (GK)	2		2			K1INF_W19 K1INF_U16	60	120	4	2,4	T	Z (w)		P (2)	K	W
2.		Neural Networks (GK)	2		2			K1INF_W19 K1INF_U16	60	120	4	2,4	T	Z (w)		P (2)	K	W
3.		Problem Solving Using Metaheuristics (GK)	2		2			K1INF_W19 K1INF_U16	60	120	4	2,4	T	Z (w)		P (2)	K	W
4.		Human-Computer Interaction (GK)	2		2			K1INF_W19 K1INF_U16	60	120	4	2,4	T	Z (w)		P (2)	K	W
		Total	2		2				60	120	4	2,,4				2		

Groups of optional courses M10 – Humanistic subject (minimum 30 hours in semester, 3 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					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes[1]			university-wide[4]	practical[5]	kind[6]	type[7]
1.		Humanistic subject 1	2					K1INF_W22	30	90	3	1,8	T	Z	O		KO	W
2.		Humanistic subject 2	2					K1INF_W22	30	90	3	1,8	T	Z	O		KO	W
		Total	2						30	90	3	1,8						

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[1]
lec	cl	lab	pr	sem				
6		2	9	2	285	900	30	18

2. Set of examinations in semestral arrangement

[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
[5]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
[7] Optional – enter W, obligatory – enter Ob

Course code	Names of courses ending with examination	Semester
	1. Logic for IT Specialists 2. Algebra and Analytic Geometry 3. Mathematical Analysis I	1
	1. Data Structures and Algorithms 2. Mathematical analysis II 3. General Physics II	2
	1. Computer Networks 2. Programming paradigms 3. Theory of Probabilistic and Statistics	3
	1. Systems Analysis and Decision Support Methods 2. Data Bases 3. Introduction to IoT	4
	1. Cybersecurity 2. Script Languages 3. Software Engineering	5
	1. Artificial intelligence and knowledge engineering 2. Data Warehouses 3. Multimedia	6

[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

[5]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

[7] Optional – enter W, obligatory – enter Ob

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

Semester	Allowable deficit of ECTS points after semester
1	8
2	8
3	8
4	8
5	8
6	0
7	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
[5]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
[7] Optional – enter W, obligatory – enter Ob