PLAN OF STUDIES

FACULTY:	Information and Communication Technology
MAIN FIELD OF STUDY:	**Applied Computer Science**
EDUCATION LEVEL:	first-level (inżynier) studies
FORM OF STUDIES:	full-time studies
PROFILE:	general academic
SPECIALIZATION:	not applicable
LANGUAGE OF STUDY:	**English/Polish**
In effect since :	2024/2025

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes Number of ECTS points: **27**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4004G	Computer System Organization (GK)	2	2				KIST_W06	60	75	3		2,40	T	Z (w)			2	PD
2	W04IST-SI4014L	Structural and Object oriented Programming			2			KIST_W03 KIST_U01	30	50	2		1,40	T	Z			2	PD
3	W04IST-SI4029G	Structural and Object oriented Programming (GK)	2	2				KIST_W03 KIST_U01 KIST_U02	60	75	3		2,60	T	Z			2	PD
4	W04IST-SI4005G	Logic for IT Specialists (GK)	2	2				KIST_W01	60	125	5	5	2,90	T	Z		DN	2	K
5	W11IST-SI4003W	Physics 1 A	2					KIST_W02	30	75	3		1,50	T	E	O			PD
6	W11IST-SI4003C	Physics 1 A		1				KIST_W03	15	50	2		0,70	T	Z	O		2	PD
7	W13IST-SI4005G	Mathematical Analysis I A (GK)	2	2				KIST_W01	60	200	8		3,00	T	E (w)	O		3	PD
8	W13IST-SI4004G	Linear Algebra with Analytic Geometry (GK)	2	2				KIST_W01	60	100	4		3,00	T	E (w)	O		2	PD
		Razem	**10**	**9**	**2**	**0**	**0**	**-**	**315**	**675**	**27**	**5**	**15,1**	**-**	**-**	**-**	**-**	**13**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN	Number of ECTS points for BU
lec	cl	lab	pr	sem					
10	9	2	0	0	315	675	27	5	15,1

Semester 2

Obligatory subjects / groups of classes Number of ECTS points: **30**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4016W	Computer Architecture	2					KIST_W06 KIST_U04 KIST_U05	30	50	2	2	1,40	T	Z		DN		K
2	W04IST-SI4016L	Computer Architecture			2			KIST_W06 KIST_U04 KIST_U06	30	50	2	2	1,40	T	Z		DN	2	K
3	W04IST-SI4017W	Operating Systems	2					KIST_W08 KIST_U06	30	50	2	2	1,40	T	Z		DN		K
4	W04IST-SI4017L	Operating Systems			2			KIST_W08 KIST_U07	30	50	2	2	1,40	T	Z		DN	2	K
5	W04IST-SI4015G	Data Structures and Algorithms (GK)	2	1				KIST_W03 KIST_U02	45	100	4	4	2,80	T	E (w)		DN	1	K
6	W04IST-SI4015L	Data Structures and Algorithms			2			KIST_W03 KIST_U01	30	50	2	2	1,40	T	Z		DN	2	K
7	W11IST-SI4004W	Physics 2 B	2					KIST_W02	30	50	2		1,50	T	E	O			PD
8	W11IST-SI4005L	Basic physics laboratory			1			KIST_W03	15	50	2		0,70	T	Z	O		2	PD
9	W04IST-SI4006G	Discrete Mathematics (GK)	2	2				KIST_W01	60	125	5		2,80	T	Z			3	PD
10	W13IST-SI4006G	Mathematical Analysis II A (GK)	2	2				KIST_W01	60	175	7		3,00	T	E (w)	O		3	PD
		Total	**12**	**5**	**7**	**0**	**0**	**-**	**360**	**750**	**30**	**14**	**17,8**	**-**	**-**	**-**	**-**	**15**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
12	5	7	0	0	360	750	30	14	17,8

Semester 3

Obligatory subjects / groups of classes Number of ECTS points: **27**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W08IST-SI4002W	Basics of Entrepreneurship	2					KIST_W19	30	50	2		1,40	T	Z				KO
2	W04IST-SI4030G	Computer Networks (GK)	2		2		1	KIST_W09 KIST_U07 KIST_U08	75	175	7	7	3,60	T/Z	E (w)		DN	4	K
3	W04IST-SI4019W	Effective Programming Techniques (GK)	1		2			KIST_W03 KIST_U01 KIST_U02	45	100	4	4	2,20	T/Z	Z		DN	2	K
4	W04IST-SI4032G	Programming paradigms (GK)	2	1	2			KIST_W04 KIST_U02	75	175	7	7	3,70	T/Z(w)	E (w)		DN	4	K
5	W08IST-SI4007G	Theory of Probabilistic and Statistics (GK)	2	2	1			KIST_W01	75	175	7		3,70	T	E (w)			4	PD
		Razem	**9**	**3**	**7**	**0**	**1**	**-**	**300**	**675**	**27**	**18**	**14,6**	**-**	**-**	**-**	**-**	**14**	**-**

Przedmioty/grupy zajęć wybieralne (min.90 godz. w sem Number of ECTS points: **3**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
	JZL100707BK	Język obcy A1/A2/B1/B2.1/C1.1/ Foreign language A1/A2/ B1/ B2.1/ C1.1		4				KIST_U19	60	90	3		2,00	T	Z	O		3	KO
1	WFW030000BK	Zajęcia sportowe I/ Sports I		2					30	30	0		0,00	T	Z	O			KO
		Razem	**0**	**6**	**0**	**0**	**0**		**90**	**120**	**3**	**0**	**2**	**-**	**-**	**-**	**-**	**3**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
9	9	7	0	1	390	795	30	18	16,6

Semester 4

Obligatory subjects / groups of classes Number of ECTS points: **22**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4010G	Systems Analysis and Decision Support Methods (GK)	2	1				KIST_W11 KIST_U06	45	125	5	5	2,30	T/Z(w)	E (w)		DN	2	K
2	W04IST-SI4010L	Systems Analysis and Decision Support Methods			1			KIST_W11 KIST_U06	15	25	1	1	0,70	T	Z		DN	1	K
3	W04IST-SI4034G	Script Languages (GK)	2		2			KIST_W03 KIST_U01	60	125	5	5	2,80	T/Z	Z (w)		DN	3	K
4	W04IST-SI4035G	Data Bases (GK)	2	1				KIST_W12 KIST_U03 KIST_U04	45	125	5	5	2,40	T/Z(w)	E (w)		DN	1	K
5	W04IST-SI4009L	Data Bases			2			KIST_W12 KIST_U03 KIST_U04	30	50	2	2	1,40	T	Z		DN	2	K
6	W04IST-SI4021L	Basics of Software Engineering			1			KIST_W05 KIST_U03	15	25	1	1	0,80	T	Z		DN	1	K
7	W04IST-SI4021G	Basics of Software Engineering (GK)	1	2				KIST_W05 KIST_U03	45	75	3	3	2,00	T/Z(w)	Z (w)		DN	2	K
		Total	**7**	**4**	**6**	**0**	**0**	**-**	**255**	**550**	**22**	**22**	**12,4**	**-**	**-**	**-**	**-**	**12**	**-**

Optional courses / groups of courses (min.60 h in sem.) Number of ECTS points: **3**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	JZL100708BK	Foreign language B2.2/C1.2		4				KIST_U19	60	90	3		2,00	T	Z	O		3	KO
2	WFW030000BK	Sports II		2					30	30	0		0,00	T	Z	O			KO
		Total	**0**	**6**	**0**	**0**	**0**		**90**	**120**	**3**	**0**	**2**	**-**	**-**	**-**	**-**	**3**	**-**

Optional M1 block - Administration of Computer Systems (min. 60h in sem., 5 ECTS points, selection of 1 subject) Number of ECTS poir **5**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4516G	Linux Server Administration (GK)	2		2			KIST_W08 KIST_U14	60	125	5	5	2,80	T/Z(w)	Z(w)		DN	3	K
2	W04IST-SI4533G	Managing IT infrastructure (GK)	2		2			KIST_W08 KIST_U14	60	125	5	5	2,80	T/Z(w)	Z(w)		DN	3	K
3	W04IST-SI4534G	Routing and Switching in Computer Networks (GK)	2		2			KIST_W08 KIST_U14	60	125	5	5	2,80	T/Z(w)	Z(w)		DN	3	K
		Total	**2**	**0**	**2**	**0**	**0**	**-**	**60**	**125**	**5**	**5**	**2,8**	**-**	**-**	**-**	**-**	**3**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
9	10	8	0	0	405	795	30	27	17,2

Semester 5

Obligatory subjects / groups of classes Number of ECTS points: **18**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W08IST-SI4001S	Presentation Techniques					2	KIST_U18	30	50	2		1,40	T	Z			2	KO
2	W04IST-SI4022W	Cybersecurity	2					KIST_W10 KIST_U08	30	75	3	3	1,60	T/Z	E		DN		K
3	W04IST-SI4022L	Cybersecurity			2			KIST_W10 KIST_U08	30	50	2	2	1,40	T	Z		DN	2	K
4	W04IST-SI4036W	Introduction to IoT	2					KIST_W09 KIST_U04 KIST_U07	30	75	3	3	1,60	T/Z	E		DN		K
5	W04IST-SI4037L	Introduction to IoT			2			KIST_W09 KIST_U04 KIST_U07	30	50	2	2	1,40	T	Z		DN	2	K
6	W04IST-SI4023W	Software Engineering	2					KIST_W14 KIST_U03 KIST_U04 KIST_U21	30	75	3	3	1,60	T/Z	E		DN		K
7	W04IST-SI4023P	Software Engineering				2		KIST_W14 KIST_U03 KIST_U04 KIST_U21	30	75	3	3	1,60	T	Z		DN	3	K
		Total	**6**	**0**	**4**	**2**	**2**	**-**	**210**	**450**	**18**	**16**	**10,6**	**-**	**-**	**-**	**-**	**9**	**-**

Optional block M2 - Web Technologies (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4518G	Web Systems Programming (GK)	2		2			KIST_W07 KIST_U11	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
2	W04IST-SI4502G	Developing Web Applications with .NET (GK)	2		2			KIST_W07 KIST_U11	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
		Total	**2**	**0**	**2**	**0**	**0**		**60**	**100**	**4**	**4**	**2,8**	**-**	**-**	**-**	**-**	**2**	**-**

Optional block M3 - Database Design (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4504G	Database Programming (GK)	1			2		KIST_W14 KIST_U03 KIST_U04	45	100	4	4	2,30	T/Z(w)	Z(w)		DN	3	K
2	W04IST-SI4521G	Database Design (GK)	1			2		KIST_W14 KIST_U03 KIST_U04	45	100	4	4	2,30	T/Z(w)	Z(w)		DN	3	K
		Razem	**1**	**0**	**0**	**2**	**0**	**-**	**45**	**100**	**4**	**4**	**2,3**	**-**	**-**	**-**	**-**	**3**	**-**

Optional block M4 - Mobile applications (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4503G	Mobile applications for Android platform (GK)	2		2			KIST_W07 KIST_U11	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
2	W04IST-SI4504G	Mobile applications for iOS platform (GK)	2		2			KIST_W07 KIST_U11	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
		Total	**2**	**0**	**2**	**0**	**0**	**-**	**60**	**100**	**4**	**4**	**2,8**	**-**	**-**	**-**	**-**	**2**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
11	0	8	4	2	375	750	30	28	18,5

Semester 6

Obligatory subjects / groups of classes Number of ECTS points: **14**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4024W	Artificial intelligence	2					KIST_W13 KIST_U06	30	50	2	2	1,50	T/Z	E		DN		K
2	W04IST-SI4039L	Artificial intelligence			2			KIST_W13 KIST_U06	30	50	2	2	1,40	T	Z		DN	2	K
3	W04IST-SI4040W	Business Data Modelling and Analysis	2					KIST_W12 KIST_U06	30	50	2	2	1,50	T/Z	E		DN		K
4	W04IST-SI400L	Business Data Modelling and Analysis			2			KIST_W12 KIST_U06	30	50	2	2	1,40	T	Z		DN	2	K
5	W04IST-SI4038Q	Practical training						KIST_U23	0	180	6	6	6,00	T/Z	Z			6	K
		Total	**4**	**0**	**4**	**0**	**0**	**-**	**120**	**380**	**14**	**14**	**11,8**	**-**	**-**	**-**	**-**	**10**	**-**

Optional block M5 - Project Management Basics (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4505G	Introduction to IT Project Management (GK)	1		2		1	KIST_W17 KIST_U09 KIST_U16 KIST_U18	60	100	4	4	3,00	T/Z(w)	Z(w)		DN	3	K
2	W04IST-SI4506G	Support for IT Project Management (GK)	1		2		1	KIST_W17 KIST_U09 KIST_U16 KIST_U18	60	100	4	4	3,00	T/Z(w)	Z(w)		DN	3	K
		Total	**1**	**0**	**2**	**0**	**1**	**-**	**60**	**100**	**4**	**4**	**3,00**	**-**	**-**	**-**	**-**	**3**	**-**

Optional block M6 - Distributed Systems (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4508G	Distributed Computer Systems (GK)	2		2			KIST_W07 KIST_U11 KIST_U16	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
2	W04IST-SI4527G	Cloud programming (GK)	2		2			KIST_W07 KIST_U11 KIST_U16	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
		Total	**2**	**0**	**2**	**0**	**0**	**-**	**60**	**100**	**4**	**4**	**2,8**	**-**	**-**	**-**	**-**	**2**	**-**

Optional block M7 - Programming Tools and Technologies (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4511G	Game Programming (GK)	2		2			KIST_W16 KIST_U13	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
2	W04IST-SI4522G	Advanced Web Technologies (GK)	2		2			KIST_W16 KIST_U13	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
		Total	**2**	**0**	**2**	**0**	**0**	**-**	**60**	**100**	**4**	**4**	**2,8**	**-**	**-**	**-**	**-**	**2**	**-**

Optional block M8 - Multimedia (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **4**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4523G	Computer Graphics (GK)	2		2			KIST_W15 KIST_U12	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
2	W04IST-SI4524G	Programming Multimedia Applications (GK)	2		2			KIST_W15 KIST_U12	6	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
3	W04IST-SI4525G	Digital Media Processing Techniques (GK)	2		2			KIST_W15 KIST_U12	60	100	4	4	2,80	T/Z(w)	Z(w)		DN	2	K
		Total	**2**	**0**	**2**	**0**	**0**	**-**	**60**	**100**	**4**	**4**	**2,8**	**-**	**-**	**-**	**-**	**2**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
11	0	12	0	1	360	780	30	30	23,2

Semester 7

Obligatory subjects / groups of classes Number of ECTS points: **24**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4008W	IT Social and Professional Problems	2					KIST_W20 KIST_W21 KIST_W22	30	50	2		1,40	T	Z				KO
2	W04IST-SI4041G	Team Project (GK)				8	1	KIST_U10 KIST_U15 KIST_U17 KIST_U20 KIST_U21 KIST_U22 KIST_K01 KIST_K02 KIST_K03 KIST_K04	135	550	22	10	6,00	T	Z			20	K
		Total	**2**	**0**	**0**	**8**	**1**	**-**	**165**	**600**	**24**	**10**	**7,4**	**-**	**-**	**-**	**-**	**20**	**-**

Optional block M9 - Current trends in Computer (min. 60h in sem., 4 ECTS points, selection of 1 subject) Number of ECTS poir **6**

No.	Subjet/ group of classes code	Name of subject/group of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of subject/group of courses	Way3 of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide4	Concerning scientific activities5	Practical6	Type7
1	W04IST-SI4535G	Data Science (GK)	2		3			KIST_W18 KIST_U10	75	150	6	6	4,00	T/Z(w)	Z(w)		DN	4	K
	W04IST-SI4536G	Neural Networks (GK)	2		3			KIST_W18 KIST_U10	75	150	6	6	4,00	T/Z(w)	Z(w)		DN	4	K
	W04IST-SI453G	Metaheuristics in Problems Solving (GK)	2		3			KIST_W18 KIST_U10	75	150	6	6	4,00	T/Z(w)	Z(w)		DN	4	K
2	W04IST-SI4538G	Human–Computer Interaction (GK)	2		3			KIST_W18 KIST_U10	75	150	6	6	4,00	T/Z(w)	Z(w)		DN	4	K
		Total	**2**	**0**	**3**	**0**	**0**	**-**	**75**	**150**	**6**	**6**	**4,00**	**-**	**-**	**-**	**-**	**4**	**-**

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS	Total number of ECTS points	Total number of ECTS points for DN classes5	Number of ECTS points for BU classes1
lec	cl	lab	pr	sem					
4	0	3	8	1	240	750	30	16	11,4

2. Set of examinations in semestral arrangement

Subject / groups of classes code	Names of subjects / groups of classesending with examination	Semester
W11IST-SI4003W W13IST-SI4004G W13IST-SI4005G	1.Physics 1 A 2.Algebra and Analytic Geometry 3.Mathematical Analysis I	1
W04IST-SI4015G W13IST-SI4006G W11IST-SI4004W	1.Data Structures and Algorithms 2.Mathematical Analysis II 3.Physics 2 B	2
W04IST-SI4030G W04IST-SI4032G W08IST-SI4007G	1.Computer Networks 2.Programming paradigms 3.Theory of Probabilistic and Statistics	3
W04IST-SI4010G W04IST-SI4035G W04IST-SI4034G	1.Systems Analysis and Decision Support Methods 2.Data Bases 3.Script Languages	4
W04IST-SI4022W W04IST-SI4036W W04IST-SI4023W	1.Cybersecurity 2.Introduction to IoT 3.Software Engineering	5
W04IST-SI4024W W04IST-SI4040W	1.Artificial Intelligence 2.Business Data Modelling and Analysis	6

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

Semester	Allowable deficit of ECTS points after semester
1	10
2	10
3	8
4	8
5	8
6	0
7	0

Opinion of student government legislative body

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Date Name and surname, signature of student representative

.....

Date Dean’s signature

6. Range of diploma examination

1. Basic digital circuits: logic gates, switches, sequence circuits.
2. Binary arithmetic, Boolean functions, Karnaugh tables.
3. Rules of structural programming. Overview of structural statements.
4. Object-oriented programming – basic concepts and their applications.
5. Basic operations on sets, functions and relations. Propositional calculus. Predicate calculus.
6. Deterministic finite automata – definitions, applications.
7. Examples of computer architectures: von Neuman, Princeton, Harvard.
8. RISC and CISC processors – characteristics, differences.
9. Graphs. Spanning trees. Euler and Hamilton cycles. Cohesion. Graph traversal algorithms.
10. Algorithm – definition. Sorting algorithms. Search algorithms.
11. Basics of algorithm analysis. Computational complexity.
12. Layered structure of the operating system. The concept of system kernel.
13. The OSI layer model.
14. Data link layer protocols. Ethernet network. TCP/IP internet protocol stack.
15. Application layer protocols.
16. Effective programming techniques – examples.
17. Memory management. Common problems. Pointers.
18. Selection of programming paradigms for solving IT problems.
19. Functional programming and imperative programming.
20. Abstract data types and their implementation in programming languages.
21. Identification algorithms of static objects. Analytical and numerical optimization methods.
22. The specificity of the Internet of Things (IoT), application areas, solving problems resulting from a large number of devices, their distribution and a number of generated data.
23. Hardware solutions supporting communication and communication protocols used in embedded systems and IoT.
24. Database models. Relational database. Normalization. Transactions.
25. SQL language. Characteristics. Sub-languages.
26. Software life cycle models.
27. Software development methodologies.
28. The use of lists, sets and dictionaries in Python.
29. Differences and similarities between Java and Python.
30. Principles of parallel programming in Python.
31. UML as a project specification language. Diagrams and their application.
32. Architectural and design patterns – classification, examples, applications.
33. Data protection methods.
34. Basic cryptographic algorithms.
35. Multidimensional data modeling (transactional and analytical data systems, types of multidimensional OLAP structures).
36. ETL process.
37. MDX expressions and directives.

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	*Course / group of courses code*	*Name of course / group of courses*	*Crediting by deadline of... (number of semester)*
1.	W11IST-SI4001W	Physics 1A	5
2.	W11IST-SI4001C	Physics 1A	5
3.	W04IST-SI4004G	Computer System Organization (GK)	3
4.	W04IST-SI4014G	Structural and Object oriented Programming (GK)	3
5.	W04IST-SI4014L	Structural and Object oriented Programming	3
6.	W04IST-SI4005G	Logic for IT Specialists (GK)	5
7.	W13IST-SI4001G	Linear Algebra with Analytic Geometry (GK)	5
8.	W13IST-SI4002G	Mathematical Analysis I A (GK)	5
9.	W04IST-SI4015L	Data Structures and Algorithms	6
10.	W04IST-SI4015G	Data Structures and Algorithms (GK)	6
11.	W04IST-SI4016W	Computer Architecture	6
12.	W04IST-SI4016L	Computer Architecture	6
13.	W04IST-SI4017W	Operating Systems	6
14.	W04IST-SI4017L	Operating Systems	6
15.	W11IST-SI4002L	Basic physics laboratory	5
16.	W11IST-SI4002G	Physics 2 B	5
17.	W04IST-SI4006G	Discrete Mathematics (GK)	5
18.	W13IST-SI4003G	Mathematical Analysis II (GK)	5
19.	W08IST-SI4002W	Basics of entrepreneurship	6
20.	W04IST-SI4018W	Computer Networks (GK)	6
21.	W04IST-SI4019W	Effective Programming Techniques (GK)	6
22.	W04IST-SI4020G	Programming paradigms (GK)	6
23.	W08IST-SI4007G	Theory of Probabilistic and Statistics (GK)	5
24.	JZL100707BK	Foreign language A1/A2/ B1/ B2.1/ C1.1	5
25.	WFW030000BK	Sports I	5
26.	W04IST-SI4009L	Databases	6
27.	W04IST-SI4009G	Databases (GK)	6
28.	W04IST-SI4010L	Systems Analysis and Decision Support Methods	6
29.	W04IST-SI4010G	Systems Analysis and Decision Support Methods (GK)	6
30.	W04IST-SI4012W	Introduction to IoT	6
31.	W04IST-SI4012L	Introduction to IoT	6
32.	W04IST-SI4021P	Basics of Software Engineering	5
33.	W04IST-SI4021W	Basics of Software Engineering (GK)	5
34.	JZL100708BK	Foreign language B2.2/C1.2	6
35.	WFW030000BK	Sports II	6
36.	W08IST-SI4001S	Presentation Techniques	6
37.	W04IST-SI4022W	Cybersecurity	6
38.	W04IST-SI4022L	Cybersecurity	6
39.	W04IST-SI4011W	Script Languages (GK)	6
40.	W04IST-SI4023W	Software Engineering	6
41.	W04IST-SI4023P	Software Engineering	6
42.	W04IST-SI4024W	Artificial intelligence	6

43.	W04IST-SI4024L	Artificial intelligence	6
44.	W04IST-SI4013W	Business Data Modelling and Analysis	6
45.	W04IST-SI4013L	Business Data Modelling and Analysis	6
46.	W04IST-SI4008W	IT Social and Professional Problems	6
47.	W04IST-SI4003Q	Practical training	7