

## PLAN OF STUDIES

**FACULTY:** Information and Communication Technology

**MAIN FIELD OF STUDY:** Applied Computer Science

**EDUCATION LEVEL:** first-level (~~licencjat~~/inżynier) studies / ~~second-level studies~~ / ~~magister uniform studies~~\*

**FORM OF STUDIES:** full-time studies / ~~part-time studies~~\*

**PROFILE:** general academic /~~practical~~ \*

**SPECIALIZATION:** not applicable

**LANGUAGE OF STUDY:** English/Polish

In effect since 2022/23

\*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*

	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS																										
28																																						
27	900	30	900	30	900	30	900	30	900	30	900	30																										
26																																						
25							Sports II	0																														
24					30	0			Presentation Tech.niques	60	2																											
23	General Physics I	120	4 (2+2)	General Physics II	180	6 (3+1+2)	Foreign language A1/A2/ B1/ B2.1/ C1.1	90	3	M4 – Mobile Applications	120	4 (2+2)	M8 – Multimedia	120	4 (2+2)																							
22																																						
21	Computer System Organization	90	3 (2+1)	Computer Architecture	120	4 (2+2)	Basics of entrepreneurship	60	2	M1 – Administration of Computer	120	4 (2+2)	M3 – Database design	120	4 (2+2)	M7 – Programming Tools and Technologies	110	4 (2+2)																				
20																																						
19																																						
18	Structural and Object oriented Programming	180	6 (2+2+2)	Data Structures and Algorithms	180	6 (2+2+2)	Computer Networks 200	7 (4+3)	Systems Analysis and Decision Support	190	7 (3+2+2)	M2 – Web Technologies	120	4 (2+2)	M6 – Distributed Systems	120	4 (2+2)	M10 – Humanistic subject	90	2																		
17																																						
16																																						
15																																						
14																																						
13																																						
12	Logics for IT Specialists	150	5 (3+2)	Operating Systems	120	4 (2+2)	Effective Programming Techniques	150	5 (2+3)	Script Languages	175	6 (3+3)	Cybersecurity	150	5 (3+2)	M5 – Project Management Basics	120	4 (1+2+1)	M9 – Current Trends in Computer Science	150	5 (2+3)																	
11																																						
10																																						
9																																						
8	Algebra and Analytic Geometry	180	6 (3+3)	Discrete Mathematics	150	5 (2+3)	Programming Paradigms	200	7 (3+2+2)	Databases	175	6 (2+2+2)	Introduction to IoT	150	5 (2+3)	Data Warehouses	120	4 (2+3)	Team Project	600	21 (19+2)																	
7																																						
6																																						
5																																						
4	Mathematical Analysis I	180	6 (3+3)	Mathematical Analysis II	150	5 (3+2)	Theory of Probabilistic and Statistics	200	7 (4+3)	Basics of Software Engineering	120	4 (1+2+1)	Software Engineering	180	6 (3+3)	Artificial Intelligence and Knowledge Engineering	150	5 (2+3)	IT Social and Prof. Problems	60	2																	
3																																						
2																																						
1																																						
	I			II			III			IV			V		VI			VII		Total																		
	24/360			24/360			25/375			26/360			25/375		24/360			17/285		165/2475																		

2) in hourly layout

28	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	CNPS	ECTS	
27	900	30	900	30	900	30	900	30	900	30	900	30	
26													
25							Sports II (2h)						
24	General Physics I (21000)	General Physics II (21100 E)	Foreign language A1/A2/ B1/ B2.1/ C1.1 (4h)	Foreign language B2.2/C1.2 (4h)	Presentation Techniques (00002)	M8 - Multimedia (20200)	M4 – Mobile applications (20200)	M7 – Programming Tools and Technologies (20200)	M10 - Humanistic subject (2h)	M9 - Current Trends in Computer Science (20200)	Team Project (00081)	IT Social and Professio-nal Problems (20000)	
23													
22													
21													
20	Computer System Organization (21000)	Computer Architecture (20200)	Basics of entre- preneurship (20000)	M1 - Administration of Computer (20200)	M3 - Database design (10020)	M6 – Distributed Systems (20200)	M2 – Web Technologies (20200)	M5 - Project Management Basics (10201)					
19													
18													
17													
16	Structural and Object oriented Programming (22200)	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)							
15													
14													
13													
12	Logics for IT Specialists (22000 E)	Operating Systems (20200)	Effective Programming Techniques (10200)	Script Languages (20200 E)	Cybersecurity (20200 E)	M5 - Project Management Basics (10201)							
11													
10													
9													
8	Algebra and Analytic Geometry (22000 E)	Discrete Mathematics (22000)	Programming Paradigms (21200 E)	Databases (21100 E)	Introduction to IoT (20200 E)	Data Warehouses (20200 E)							
7													
6													
5													
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)							
3													
2													
1													
	I	II	III	IV	V	VI	VII	Total					
	24/360	24/360	25/375	26/360	25/375	24/360	17/285	165/2475					

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

## Semester 1

### Obligatory courses / groups of 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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004399L	Structural and Object oriented Programming			2			K1INF_W03 K1INF_U01 K1INF_U02	30	60	2		1,2	T	Z			P (2)	PD
2.	INZ004400Wc	Computer System Organization (GK)	2	1				K1INF_W06	45	90	3		1,8	T	Z (w)				PD
3.	INZ004399Wc	Structural and Object oriented Programming (GK)	2	2				K1INF_W03 K1INF_U01 K1INF_U02	60	120	4		2,4	T	Z (w)				PD
4.	INZ004402Wc	Logic for IT Specialists (GK)	2	2				K1INF_W01	60	150	5	5	3	T	E (w)		DN		K
5.	FZP001136Wc	General Physics I (GK)	2	1				K1INF_W02	45	120	4		2,4	T	Z (w)	O			PD
6.	MAT001688Wc	Algebra and Analytic Geometry (GK)	2	2				K1INF_W01	60	180	6		3,6	T	E (w)	O			PD
7.	MAT001689Wc	Mathematical Analysis I (GK)	2	2				K1INF_W01	60	180	6		3,6	T	E (w)	O			PD
Total			12	10	2				360	900	30	5	18					2	

### Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
12	10	2			360	900	30	5	18

## Semester 2

### Obligatory courses / groups of 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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004403L	Data Structures and Algorithms			2			K1INF_W03 K1INF_U01	30	60	2	2	1,2	T	Z		DN	P (2)	K
2.	INZ004404W	Computer Architecture	2					K1INF_W06 K1INF_U04 K1INF_U05	30	60	2	2	1,2	T	Z		DN		K
3.	INZ004404L	Computer Architecture			2			K1INF_W06 K1INF_U04 K1INF_U05	30	60	2	2	1,2	T	Z		DN	P (2)	K
4.	FZP001137L	General Physics II			1			K1INF_W02	15	60	2		1,2	T	Z	O		P (2)	PD
5.	INZ004405W	Operating Systems	2					K1INF_W08 K1INF_U06	30	60	2	2	1,2	T	Z		DN		K
6.	INZ004405L	Operating Systems			2			K1INF_W08 K1INF_U06	30	60	2	2	1,2	T	Z		DN	P (2)	K
7.	INZ004403Wc	Data Structures and Algorithms (GK)	2	1				K1INF_W03 K1INF_U01	45	120	4	4	2,4	T	E (w)		DN		K
8.	FZP001137Wc	General Physics II (GK)	2	1				K1INF_W02	45	120	4		2,4	T	E (w)	O			PD
9.	INZ004406Wc	Discrete Mathematics (GK)	2	2				K1INF_W01	60	150	5		3	T	Z (w)				PD
10.	MAT001690Wc	Mathematical Analysis II (GK)	2	1				K1INF_W01	45	150	5		3	T	E (w)	O			PD
Total																			

### Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
12	5	7			360	900	30	14	18

## Semester 3

### Obligatory courses / groups of 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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	ZMZ001643W	Basics of entrepreneurship	2					K1INF_W19	30	60	2		1,2	T	Z				KO
2.	INZ004407W	Computer Networks	3					K1INF_W09 K1INF_U07	45	110	4	4	2,4	T/Z	E		DN		K
3.	INZ004407L	Computer Networks			2			K1INF_W09 K1INF_U07	30	90	3	3	1,8	T	Z		DN	P (3)	K
4.	INZ004408W	Effective Programming Techniques	1					K1INF_W03 K1INF_U01	15	60	2	2	1,2	T/Z	Z		DN		K
5.	INZ004408L	Effective Programming Techniques			2			K1INF_W03 K1INF_U01	30	90	3	3	1,8	T	Z		DN	P (3)	K
6.	INZ004409Wc	Programming paradigms			2			K1INF_W04 K1INF_U02	30	60	2	2	1,2	T	Z		DN	P (2)	K
7.	INZ004409L	Programming paradigms (GK)	2	1				K1INF_W04 K1INF_U02	45	140	5	5	3	T/Z(w)	E (w)		DN		K
8.	INZ004410Wc	Theory of Probabilistic and Statistics (GK)	2	2				K1INF_W01	60	200	7		4,2	T/Z(w)	E (w)				PD
Total			10	3	6				285	810	28	19	16,8					8	

### Optional courses / groups of courses (minimum 90 hours in semester, 2 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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	JZL100927BK	Foreign language A1/A2/ B1/ B2.1/ C1.1		4				K1INF_U19	60	60	2		1,2	T	Z	O			KO
2.	WFW030000BK	Sports I		2					30	30	0		0	T	Z	O			KO
Total				6					90	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	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
10	7	6			375	900	30	19	18

## Semester 4

### Obligatory courses / groups of courses Number of ECTS points 23

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ002023L	Data Bases			1			K1INF_W13 K1INF_U03 K1INF_U04	15	60	2	2	1,2	T	Z		DN	P (2)	K
2.	INZ002024L	Systems Analysis and Decision Support Methods			1			K1INF_W12 K1INF_U07	15	50	2	2	1,2	T	Z		DN	P (2)	K
3.	INZ002025W	Script Languages	2					K1INF_W03 K1INF_U01	30	85	3	3	1,8	T/Z	E		DN		K
4.	INZ002025L	Script Languages			2			K1INF_W03 K1INF_U01	30	90	3	3	1,8	T	Z		DN	P (3)	K
5.	INZ004414L	Basics of Software Engineering			1			K1INF_W06 K1INF_U03	15	30	1	1	0,6	T	Z		DN	P (1)	K
6.	INZ002023Wc	Data Bases (GK)	2	1				K1INF_W13 K1INF_U03 K1INF_U04	45	115	4	4	2,4	T/Z(w)	E(w)		DN		K
7.	INZ002024Wc	Systems Analysis and Decision Support Methods (GK)	2	1				K1INF_W12 K1INF_U07	45	140	5	5	3	T/Z(w)	E(w)		DN		K
8.	INZ004414Wc	Basics of Software Engineering (GK)	1	2				K1INF_W06 K1INF_U03	45	90	3	3	1,8	T/Z(w)	Z(w)		DN		K
Total			7	4	5				240	660	23	23	13,8					8	

### Optional courses / groups of courses (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 <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	JZL100928BK	Foreign language B2.2/C1.2		4				K1INF_U17	60	90	3		1,8	T	Z	O			KO
2.	WF030000BK	Sports II		2					30	30	0		0	T	Z	O			KO
Total				6					90	120	3		1,8						

**Optional M1 block - Administration of Computer Systems (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)**

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004415W1	Linux Server Administration (GK)	2		2			K1INF_W08 K1IN_U14	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ004468W1	Managing IT infrastructure (GK)	2		2			K1INF_W08 K1IN_U14	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
3.	INZ002026W1	Routing and Switching in Computer Networks (GK)	2		2			K1INF_W08 K1IN_U14	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			2		2				60	120	4	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	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
9	10	7			390	900	30	27	18



## Semester 5

### Obligatory courses / groups of courses Number of ECTS points 18

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	SCZ001115S	Presentation Techniques					2	K1INF_U18	30	60	2		1,2	T	Z				KO
2.	INZ004418W	Cybersecurity	2					K1INF_W10 K1INF_U08	30	90	3	3	1,8	T/Z	E		DN		K
3.	INZ004418L	Cybersecurity			2			K1INF_W10 K1INF_U08	30	60	2	2	1,2	T	Z		DN	P (2)	K
4.	INZ002027W	Introduction to IoT	2					K1INF_W09 K1INF_U04 K1INF_U07	30	60	2	2	1,2	T/Z	E		DN		K
5.	INZ002027L	Introduction to IoT			2			K1INF_W09 K1INF_U04 K1INF_U07	30	90	3	3	1,8	T	Z		DN	P (3)	K
6.	INZ004419W	Software Engineering	2					K1INF_W14 K1INF_U03 K1INF_U04 K1INF_U21	30	90	3	3	1,8	T/Z	E		DN		K
7.	INZ004419P	Software Engineering				2		K1INF_W14 K1INF_U03 K1INF_U04 K1INF_U21	30	90	3	3	1,8	T	Z		DN	P (3)	K
Total			6		4	2	2		210	540	18	16	10,8					8	

### Optional block M2 - Web Technologies (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004420W1	Web Systems Programming (GK)	2		2			K1INF_W07 K1INF_U11	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ002028W1	Developing Web Applications with .NET (GK)	2		2			K1INF_W07 K1INF_U11	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			2		2				60	120	4	4	2,4					2	

**Optional block M3 - Database Design (minimum 45 hours in semester, 4 ECTS points, selection of 1 course)**

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004470Wp	Database Programming (GK)	1			2		K1INF_W14 K1INF_U03 K1INF_U04	45	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ004424Wp	Database Design (GK)	1			2		K1INF_W14 K1INF_U03 K1INF_U04	45	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			1			2			45	120	4	4	2,4					2	

**Optional block M4 - Mobile applications (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)**

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ002029W1	Mobile Applications for Android (GK)	2		2			K1INF_W07 K1INF_U11	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ002030W1	Mobile Applications for IOS (GK)	2		2			K1INF_W07 K1INF_U11	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			2		2				60	120	4		4					2	

**Altogether in semester**

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
11		8	4	2	375	900	30	28	18

## Semester 6

### Obligatory courses / groups of courses

### Number of ECTS points 9

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004427W	Artificial intelligence and knowledge engineering	2					K1INF_W13 K1INF_U06	30	60	2	2	1,2	T/Z	E		DN		K
2.	INZ004427L	Artificial intelligence and knowledge engineering			2			K1INF_W13 K1INF_U06	30	90	3	3	1,8	T	Z		DN	P (3)	K
3.	INZ002031W	Data Warehouses	2					K1INF_W12 K1INF_U06	30	60	2	2	1,2	T/Z	E		DN		K
4.	INZ002031L	Data Warehouses			2			K1INF_W12 K1INF_U06	30	60	2	2	1,2	T	Z		DN	P (2)	K
5.	INZ002044Q	Practical training							0	160	5	0	0	T	Z			P(5)	K
Total			4		4				120	430	14	9	5,4					10	

### Optional block M5 - Project Management Basics (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ002032Wls	Introduction to IT Project Management (GK)	1		2		1	K1INF_W17 K1INF_U09 K1INF_U16 K1INF_U18	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ002033Wls	Support for IT Project Management (GK)	1		2		1	K1INF_W17 K1INF_U09 K1INF_U16 K1INF_U18	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			1		2		1		60	120	4	4	2,4					2	

### Optional block M6 - Distributed Systems (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ002035W1	Distributed Computer Systems (GK)	2		2			K1INF_W07 K1INF_U11 K1INF_U16	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ004470W1	Cloud programming (GK)	2		2			K1INF_W07 K1INF_U11 K1INF_U16	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K

	Total	2		2				60	120	4	4	2,4				2	
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### Optional block M7 - Programming Tools and Technologies (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004376W1	Game Programming (GK)	2		2			K1INF_W16 K1INF_U13	60	110	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ004436W1	Advanced Web Technologies (GK)	2		2			K1INF_W16 K1INF_U13	60	110	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			2		2			60	110	4	4	2,4						2	

### Optional block M8 - Multimedia (minimum 60 hours in semester, 4 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004437W1	Computer Graphics (GK)	2		2			K1INF_W15 K1INF_U12	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
2.	INZ004438W1	Programming Multimedia Applications (GK)	2		2			K1INF_W15 K1INF_U12	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
3.	INZ004439W1	Digital Media Processing Techniques (GK)	2		2			K1INF_W15 K1INF_U12	60	120	4	4	2,4	T/Z(w)	Z (w)		DN	P (2)	K
Total			2		2			60	120	4	4	2,4					DN	2	

### Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	Cl	lab	pr	sem					
11		12		1	360	900 (including 160 of training)	30 (including 5 of training)	25	18 (including 3 of training)

## Semester 7

### Obligatory courses / groups of courses

Number of ECTS points 22

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ004440W	IT Social and Professional Problems	2					K1INF_W20 K1INF_W22	30	60	2		1,2	T	Z				KO
2.	INZ002039Ps	Team Project (GK)				8	1	K1INF_U10 K1INF_U17 K1INF_U20 K1INF_U21 K1INF_U22 K1INF_K01 K1INF_K02 K1INF_K03 K1INF_K04	135	600	21	10	12,6	T	Z		DN	P (19)	K
Total			2			8	1		165	660	23	10	13,8						

### Optional block M9 - Current trends in Computer (minimum 60 hours in semester, 5 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.	INZ002040W1	Data Science (GK)	2		2			K1INF_W18 K1INF_U10	60	150	5	5	3	T/Z(w)	Z (w)		DN	P (3)	K
2.	INZ002041W1	Neural Networks (GK)	2		2			K1INF_W18 K1INF_U10	60	150	5	5	3	T/Z(w)	Z (w)		DN	P (3)	K
3.	INZ002042W1	Metaheuristics in Problems Solving (GK)	2		2			K1INF_W18 K1INF_U10	60	150	5	5	3	T/Z(w)	Z (w)		DN	P (3)	K
4.	INZ002043W1	Human-Computer Interaction (GK)	2		2			K1INF_W18 K1INF_U10	60	150	5	5	3	T/Z(w)	Z (w)		DN	P (3)	K
Total			2		2				60	150	5	5	3					3	

### Optional block M10 - Humanistic subject (minimum 30 hours in semester, 2 ECTS points, selection of 1 course)

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					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1.		Humanities subject 1	2					K1INF_W22	30	90	2		1,2	T	Z	O			KO
2.		Humanities subject 2	2					K1INF_W22	30	90	2		1,2	T	Z	O			KO
Total			2						30	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	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
6		2	8	1	255	900	30	15	18

### 3. Set of examinations in semestral arrangement

Course / group of courses code	Names of courses / groups of courses ending with examination	Semester
INZ004402Wc MAT001688Wc MAT001689Wc	1. Logic for IT Specialists 2. Algebra and Analytic Geometry 3. Mathematical Analysis I	1
INZ004403Wc MAT001690Wc FZP001137Wc	1. Data Structures and Algorithms 2. Mathematical Analysis II 3. General Physics II	2
INZ004407W INZ004409Wc INZ004410Wc	1. Computer Networks 2. Programming paradigms 3. Theory of Probabilistic and Statistics	3
INZ002024Wc INZ002023Wc INZ002025W	1. Systems Analysis and Decision Support Methods 2. Databases 3. Script Languages	4
INZ004418W INZ002027W INZ004419W	1. Cybersecurity 2. Introduction to IoT 3. Software Engineering	5
INZ004427W INZ002031W	1. Artificial intelligence and knowledge engineering 2. Data Warehouses	6

#### 4. 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

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.....

Date

Name and surname, signature of student representative

.....

.....

Date

Dean's signature

See Uchwała nr 28/3/2021-2024  
Rady Wydziału Informatyki i Telekomunikacji  
Politechniki Wrocławskiej  
z dnia 9 lutego 2022 r.  
*w sprawie zaopiniowania zasad zaliczania studenckich praktyk zawodowych*