

DESCRIPTION OF THE PROGRAM OF STUDIES

1. Description

1.1 Number of semesters: 7	1.2 Total number of ECTS points necessary to complete studies at a given level: 210
1.3 Total number of hours: 2520	1.4 Prerequisites (particularly for second-level studies): The basis of the enrollment decision is an RECRUITING FACTOR. Its value depends on second level education certificate. RECRUITING FACTOR is a total of points for qualifying subjects (Mathematics, Physics, Polish, foreign language), calculated in accordance with rules adopted by the Senate. RECRUITING FACTOR threshold value depends on the number of candidates.
1.5 Upon completion of studies graduate obtains professional degree of: bachelor (engineer)	1.6 Graduate profile, employability: Graduate in the first level of studies in the field Industrial Control Engineering has the knowledge in the field of computer science, automatic control, robotics, signal analysis, computation algorithms, and decision-making algorithms. Has the ability to use automation systems, adequate hardware, and professional engineering software. The Graduate is prepared for operation, commissioning, automation and robotics system design in various industrial applications. He can be employed in the electrical industry, electronics, chemical, metallurgy, food processing and environment related industries. Graduates are prepared to enroll in second level studies
1.7 Possibility of continuing studies: 2nd level studies	1.8 Indicate connection with University's mission and its development strategy: The knowledge acquired during studies will not only guarantee a successful professional career but also shape a human with enterprising spirit, welcoming new challenges.

2. Detailed description:

2.1 Total number of learning outcomes in the program of study:

W (knowledge) = 48

U (skills) = 46

K (competences) = 10

W + U + K = 104

2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:

D1 (major): 104

2.3 For the field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:

D1 100 % ECTS points

2.4a. For the general academic profile field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the faculty is assigned:

149 ECTS

2.5. Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market:

Current needs of the labor market are related to the characteristics of industries. Considerably high proliferation of automation robots is typical for various industries. Graduates in the field Industrial Control Engineering are trained to operate and program automatic control systems uncouncted in various industrial processes, with particular emphasis on machinery automation, vehicles automation, electrical power engineering systems and apparatus.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BK1 code)

147 ECTS

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	48
Number of ECTS points for optional subjects	2
Total number of ECTS points	50

2.8. Total number of ECTS points, which student has to obtain from practical classes, including laboratory classes

Number of ECTS points for obligatory subjects	59
Number of ECTS points for optional subjects	43
Total number of ECTS points	102

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of university-wide classes or other main field of study

45 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

63 ECTS points

3. Description of the process leading to learning outcomes acquisition:

The student should be familiarized by the academic teacher with the initial requirements for the course, assumed learning outcomes and the course program, the lecturer should indicate the need for regular student work and motivate him to think independently and draw conclusions during the didactic classes.

4. List of education blocks:

4.1. List of obligatory blocks

4.1.1. List of general education blocks

4.1.1.1. Liberal-managerial subjects block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type

4.1.1.2. Foreign languages block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type

4.1.1.3. Sporting classes block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type

4.1.1.4. Information technologies block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	INR052501W	Computer technology	1					K1APR_W11 K1APR_K4	15	30	1	0,7	T	Z			KO	OB
2	INR052501L	Computer technology			1			K1APR_U9 K1APR_K4	15	30	1	0,7	T	Z		P	KO	OB
Total			1	0	1	0	0		30	60	2	1,4						

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points
lec	cl	lab	pr	sem				
1	0	1	0	0	30	60	2	1,4

4.1.2. List of basic sciences blocks

4.1.2.1. Mathematics block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR012104W	Numerical methods	1					K1APR_W35 K1APR_K4 K1APR_K5	15	30	1	0,7	T	Z			PD	OB
2	APR012104P	Numerical methods				2		K1APR_U31 K1APR_K4 K1APR_K5	30	60	2	1,4	T	Z		P	PD	OB
3	MAT001500W	Ordinary differential equations A	2					K1APR_W4 K1APR_K1	30	90	3	2,1	T	Z	O		PD	OB
4	MAT001501W	Applied statistics	2					K1APR_W5 K1APR_K1	30	90	3	2,1	T	Z	O		PD	OB
5	MAT001736W	Algebra and Analytic Geometry	2					K1APR_W1 K1APR_K3 K1APR_K7	30	60	2	1,4	T	E	O		PD	OB
6	MAT001736C	Algebra and Analytic Geometry		1				K1APR_U1 K1APR_K3 K1APR_K7	15	60	2	1,4	T	Z	O	P	PD	OB
7	MAT001737W	Mathematical Analysis 1	2					K1APR_W2 K1APR_K3 K1APR_K7	30	150	5	3,5	T	E	O		PD	OB
8	MAT001737C	Mathematical Analysis 1		2				K1APR_U2 K1APR_K3 K1APR_K7	30	90	3	2,1	T	Z	O	P	PD	OB
9	MAT001738W	Mathematical Analysis 2	2					K1APR_W3 K1APR_K3 K1APR_K7	30	120	4	2,8	T	E	O		PD	OB
10	MAT001738C	Mathematical Analysis 2		2				K1APR_U3 K1APR_K3 K1APR_K7	30	90	3	2,1	T	Z	O	P	PD	OB
Total			11	5	0	2	0		270	840	28	19,6						

4.1.2.2. Physics block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	FZP003067W	Physics E5	2					K1APR_W6 K1APR_K4	30	120	4	2,8	T	E	O		PD	OB
2	FZP003067C	Physics E5		1				K1APR_U4 K1APR_K4	15	30	1	0,7	T	Z	O	P	PD	OB
3	FZP003068W	Physics G5	2					K1APR_W7	30	120	4	2,8	T	E	O		PD	OB
4	FZP003068L	Physics G5			1			K1APR_U4 K1APR_U5 K1APR_K9	15	30	1	0,7	T	Z	O	P	PD	OB
Total			4	1	1	0	0		90	300	10	7						

4.1.2.3. Chemistry block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

4.1.2.4. Computer science block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR011303W	Computer networks	1					K1APR_W11 K1APR_W12 K1APR_W14	15	30	1	0,7	T	Z			PD	OB
2	APR011303L	Computer networks			1			K1APR_U9 K1APR_U10 K1APR_U12 K1ARR_K1	15	30	1	0,7	T	Z		P	PD	OB
3	APR012502W	Programming in the C language	2					K1APR_W12	30	60	2	1,4	T	Z			PD	OB
4	APR012502L	Programming in the C language			2			K1APR_U10 K1APR_K4	30	60	2	1,4	T	Z		P	PD	OB
5	APR013204W	Programming in MATLAB	1					K1APR_W13	15	60	2	1,4	T	Z			PD	OB
6	APR013204L	Programming in MATLAB			2			K1APR_U11 K1APR_K3 K1APR_K4 K1APR_K5	30	60	2	1,4	T	Z		P	PD	OB
Total			4	0	5	0	0		135	300	10	7						

Altogether for basic sciences blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points
lec	cl	lab	pr	sem				
19	6	6	2	0	495	1440	48	33,6

4.1.3. List of main-field-of-study blocks

4.1.3.1. Obligatory main-field-of-study block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR011201W	Fundamentals of Materials Engineering	2					K1APR_W8 K1APR_K3	30	60	2	1,4	T	Z			K	OB
2	APR011201L	Fundamentals of Materials Engineering			1			K1APR_U4 K1APR_U5 K1APR_U6 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
3	APR011302W	Electric circuits	2					K1APR_W17	30	90	3	2,1	T	E			K	OB
4	APR011302C	Electric circuits		2				K1APR_U15 K1APR_K1 K1APR_K4	30	90	3	2,1	T	Z		P	K	OB
5	APR011304W	Electrical and Magnetic Circuits	3					K1APR_W16 K1APR_W17 K1APR_W18	45	150	5	3,5	T	E			K	OB
6	APR011304C	Electrical and Magnetic Circuits		1				K1APR_U15 K1APR_U16 K1APR_K3	15	60	2	1,4	T	Z		P	K	OB
7	APR011311P	Digital signal processing 2				2		K1APR_U28 K1APR_K3 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
8	APR011312W	Fundamentals of electrical engineering	2					K1APR_W16 K1APR_K4	30	90	3	2,1	T	Z			K	OB
9	APR011312C	Fundamentals of electrical engineering		1				K1APR_U14 K1APR_K4	15	60	2	1,4	T	Z		P	K	OB
10	APR012101W	Fundamentals of control engineering 1	2					K1APR_W23	30	120	4	2,8	T	E			K	OB
11	APR012101C	Fundamentals of control engineering 1		2				K1APR_U21 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
12	APR012102W	Fundamentals of control engineering 2	2					K1APR_W23	30	90	3	2,1	T	E			K	OB
13	APR012102C	Fundamentals of control engineering 2		1				K1APR_U21 K1APR_K5	15	30	1	0,7	T	Z		P	K	OB
14	APR012102L	Fundamentals of control engineering 2			2			K1APR_U21 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
15	APR012103W	Methods and Algorithms of Digital Control Systems	2					K1APR_W23 K1APR_W31 K1APR_K3	30	60	2	1,4	T	Z			K	OB
16	APR012103L	Methods and Algorithms of Digital Control Systems			1			K1APR_U11 K1APR_U28 K1APR_U27 K1APR_K3	15	60	2	1,4	T	Z		P	K	OB
17	APR012301W	Electrical Devices and Power Substations	2					K1APR_W24 K1APR_K1	30	60	2	1,4	T	Z			K	OB
18	APR012401W	Electrical safety	1					K1APR_W36 K1APR_K3	15	30	1	0,7	T	Z			K	OB
19	APR012401L	Electrical safety			1			K1APR_U32 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB

20	APR012503W	Electric power systems	2					K1APR_W15 K1APR_W25 K1APR_K5	30	60	2	1,4	T	Z			K	OB
21	APR013102W	Electrical machines 1	2					K1APR_W26 K1APR_K3	30	90	3	2,1	T	E			K	OB
22	APR013103L	Electrical machines 2			2			K1APR_U22 K1APR_K6	30	60	2	1,4	T	Z		P	K	OB
23	APR013202W	Programmable Logic Controllers	1					K1APR_W30 K1APR_K3	15	30	1	0,7	T	Z			K	OB
24	APR013202L	Programmable Logic Controllers			2			K1APR_U26 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
25	APR013205W	Electrical Drive 1	2					K1APR_W27	30	90	3	2,1	T	E			K	OB
26	APR013205C	Electrical Drive 1		1				K1APR_U23 K1APR_K3	15	60	2	1,4	T	Z		P	K	OB
27	APR013206W	Power electronics 1	2					K1APR_W28 K1APR_K1	30	60	2	1,4	T	Z			K	OB
28	APR013207L	Electrical Drive 2			2			K1APR_U23 K1APR_K3 K1APR_K4	30	30	1	0,7	T	Z		P	K	OB
29	APR013208L	Power electronics 2			2			K1APR_U24 K1APR_K5	30	30	1	0,7	T	Z		P	K	OB
30	APR013209W	Drives of robots and machine tools	2					K1APR_W34	30	30	1	0,7	T	Z			K	OB
31	APR013209L	Drives of robots and machine tools			1			K1APR_U30 K1APR_K2 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
32	APR013238W	Fundamentals of microprocessors 1	1					K1APR_W29 K1APR_K3	15	60	2	1,4	T	Z			K	OB
33	APR013238L	Fundamentals of microprocessors 1			1			K1APR_U25 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
34	APR013239L	Fundamentals of microprocessors 2			2			K1APR_U25 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
35	APR013301W	Basics of Metrology	2					K1APR_W19	30	90	3	2,1	T	Z			K	OB
36	APR013301L	Basics of Metrology			1			K1APR_U5 K1APR_U17 K1APR_K5	15	60	2	1,4	T	Z		P	K	OB
37	APR013302W	Basics of Electronics 1	2					K1APR_W20 K1APR_K1	30	60	2	1,4	T	Z			K	OB
38	APR013303L	Basics of Electronics 2			2			K1APR_U18 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
39	APR013304W	Sensors and Transducers	1					K1APR_W21 K1APR_K3	15	60	2	1,4	T	E			K	OB
40	APR013304L	Sensors and Transducers			1			K1APR_U19 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
41	APR013305W	Industrial Measurement	2					K1APR_W22 K1APR_K2	30	90	3	2,1	T	E			K	OB
42	APR013305L	Industrial Measurement			2			K1APR_U20 K1APR_K2	30	60	2	1,4	T	Z		P	K	OB
43	APR011308W	Digital signal processing 1	1					K1APR_W32 K1APR_K4	15	30	1	0,7	T	Z			K	OB
44	ARE009001W	Basics of robotics	2					K1APR_W33 K1APR_K4	30	60	2	1,4	T	Z			K	OB
45	ARE009001L	Basics of robotics			1			K1APR_U29 K1APR_K4	15	30	1	0,7	T	Z		P	K	OB
46	GFR053101W	Engineering graphics	1					K1APR_W9	15	60	2	1,4	T	Z			K	OB
47	GFR053101L	Engineering graphics			2			K1APR_U7 K1APR_K1	30	60	2	1,4	T	Z		P	K	OB
48	MMM012014W	Mechanics and strength of materials	2					K1APR_W10 K1APR_K1	30	60	2	1,4	T	Z			K	OB
49	MMM012014C	Mechanics and strength of materials		1				K1APR_U8 K1APR_K1	15	30	1	0,7	T	Z		P	K	OB
Total			43	9	26	2	0		1200	2910	97	67,9						

Altogether for main-field-of-study blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points
lec	cl	lab	pr	sem				
43	9	26	2	0	1200	2910	97	67,9

4.2. List of optional blocks

4.2.1. List of general education blocks

4.2.1.1. Liberal-managerial subjects block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	FLH050811W	Engineering Ethics	1					K1APR_W37 K1APR_K2	15	30	1	0,7	T	Z	O		KO	W
2	FLH051511W	Philosophy of science and technology	1					K1APR_W37 K1APR_K2	15	30	1	0,7	T	Z	O		KO	W
3	FLH052011W	Philosophy	1					K1APR_W37 K1APR_K2	15	30	1	0,7	T	Z	O		KO	W
4	FLH052111W	Theory of knowledge	1					K1APR_W37 K1APR_K2	15	30	1	0,7	T	Z	O		KO	W
5	PRH051311W	Legal and ethical aspects of the work of an engineer	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
6	PRH051911W	Intellectual Property Law	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
7	PRR051206W	Protection of intellectual property	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
8	PRR051207W	Protection of intellectual property in engineering activity	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
9	PRR051208W	Patent and copyright	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
10	PSH050611S	The basis of negotiations					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
11	PSH050711S	Selfpresentation					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
12	PSH050911S	Self among others					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
13	ZMR052507W	Management bases	1					K1APR_W38 K1APR_K2 K1APR_K4	15	30	1	0,7	T	Z	O		KO	W
14	ZMR052508W	Marketing management	1					K1APR_W38 K1APR_K2 K1APR_K4	15	30	1	0,7	T	Z	O		KO	W
15	ZMR052509W	Management in the conditions of globalization and regionalization	1					K1APR_W38 K1APR_K2 K1APR_K4	15	30	1	0,7	T	Z	O		KO	W
Total			3	0	0	0	1		60	150	5	3,5						

4.2.1.2. Foreign languages block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	JZL100707BKC	Foreign language B2 or C1		4				K1APR_U33 K1APR_K1 K1APR_K8	60	60	2	1,4	T	Z	O	P	KO	W
2	JZL100708BKC	Foreign language B2 or C1		4				K1APR_U33 K1APR_K1 K1APR_K8	60	90	3	2,1	T	Z	O	P	KO	W
Total				8					120	150	5	3,5						

4.2.1.3. Sporting classes block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	WFW000000BKC	Sporting classes		2				K1APR_K8	30	30	0	0	T	Z	O	P	KO	W
2	WFW000000BKC	Sporting classes		2				K1APR_K8	30	30	0	0	T	Z	O	P	KO	W
Total			0	4	0	0	0		60	60	0	0						

4.2.1.4. Information technologies block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Numb er of ECTS points
lec	cl	lab	pr	sem				
3	12	0	0	1	240	360	10	7

4.2.2. List of basic sciences blocks

4.2.2.1. Mathematics block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

4.2.2.2. Physics block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

4.2.2.3. Chemistry block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

4.2.2.4. Computer science block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	APR011305W	Database systems	1					K1APR_W15	15	30	1	0,7	T	Z			PD	W
2	APR011305P	Database systems				1		K1APR_U13 K1APR_K1	15	30	1	0,7	T	Z		P	PD	W
3	APR011306W	Database in the technique	1					K1APR_W15	15	30	1	0,7	T	Z			PD	W
4	APR011306P	Database in the technique				1		K1APR_U13 K1APR_K1	15	30	1	0,7	T	Z		P	PD	W
5	APR011307W	Acquisition systems and identify objects	1					K1APR_W15	15	30	1	0,7	T	Z			PD	W
6	APR011307P	Acquisition systems and identify objects				1		K1APR_U13 K1APR_K1	15	30	1	0,7	T	Z		P	PD	W
Total			1			1			30	60	2	1,4						

Altogether for basic sciences blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points
lec	cl	lab	pr	sem				
1	0	0	1	0	30	60	2	1,4

4.2.3. List of main-field-of-study blocks

4.2.3.1. Optional main-field-of-study subjects block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type

4.2.3.2. Optional main-field-of-study subjects - AMPU block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR013210W	Monitoring and diagnostic systems in industry	2					K1APR_AMPU_W1	30	90	3	2,1	T	E			K	W
2	APR013210L	Monitoring and diagnostic systems in industry			2			K1APR_AMPU_U1 K1APR_K1 K1APR_K4 K1APR_K9	30	60	2	1,4	T	Z		P	K	W
3	APR013211W	Automation of industrial processes	1					K1APR_AMPU_W3 K1APR_K9	15	30	1	0,7	T	Z			K	W
4	APR013211L	Automation of industrial processes			2			K1APR_AMPU_U3 K1APR_K9	30	60	2	1,4	T	Z		P	K	W
5	APR013212W	Controlled Electrical Drives - fundamentals	2					K1APR_AMPU_W5	30	90	3	2,1	T	E			K	W
6	APR013212L	Controlled Electrical Drives - fundamentals			1			K1APR_AMPU_U5 K1APR_K3 K1APR_K9	15	60	2	1,4	T	Z		P	K	W
7	APR013213W	Industrial drive systems	2					K1APR_AMPU_W4 K1APR_K9	30	60	2	1,4	T	Z			K	W
8	APR013213S	Industrial drive systems					1	K1APR_AMPU_U4 K1APR_K1	15	30	1	0,7	T	Z		P	K	W
9	APR013214W	Artificial intelligence methods	2					K1APR_AMPU_W6	30	90	3	2,1	T	E			K	W
10	APR013214L	Artificial intelligence methods			1			K1APR_AMPU_U6 K1APR_K3 K1APR_K4 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
11	APR013215W	Distributed automation systems	1					K1APR_AMPU_W7 K1APR_K9	15	30	1	0,7	T	Z			K	W
12	APR013215L	Distributed automation systems			2			K1APR_AMPU_U7 K1APR_K9	30	60	2	1,4	T	Z		P	K	W
13	APR013219L	Computer-aided design of industrial drives			2			K1APR_AMPU_U8 K1APR_K1	30	60	2	1,4	T	Z		P	K	W
14	APR013306W	Analogue and Digital Measurement Systems	1					K1APR_AMPU_W2 K1APR_K9	15	30	1	0,7	T	Z			K	W
15	APR013306L	Analogue and Digital Measurement Systems			2			K1APR_AMPU_U2 K1APR_K9	30	30	1	0,7	T	Z		P	K	W
Total			11	0	12	0	1		360	810	27	18,9						

4.2.3.3. Optional main-field-of-study subjects - ASE block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	APR012105W	Control Apparatus and Systems	1					K1APR_ASE_W1	15	60	2	1,4	T	E			K	W
2	APR012105P	Control Apparatus and Systems				2		K1APR_ASE_U1 K1APR_K3 K1APR_K5	30	60	2	1,4	T	Z		P	K	W
3	APR012106W	Theory of automata	1					K1APR_ASE_W4	15	30	1	0,7	T	Z			K	W
4	APR012106L	Theory of automata			2			K1APR_ASE_U4 K1APR_K9	30	30	1	0,7	T	Z		P	K	W
5	APR012107W	Decision making methods	1					K1APR_ASE_W7	15	60	2	1,4	T	Z			K	W
6	APR012107S	Decision making methods					1	K1APR_ASE_U7 K1APR_K3 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
7	APR012201W	Optoelectronic	1					K1APR_ASE_W2 K1APR_K9	15	30	1	0,7	T	Z			K	W
8	APR012201L	Optoelectronic			1			K1APR_ASE_U2 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
9	APR012202W	Power system protection - fundamentals	2					K1APR_ASE_W3	30	90	3	2,1	T	E			K	W
10	APR012202L	Power system protection - fundamentals			1			K1APR_ASE_U3 K1APR_K9	15	60	2	1,4	T	Z		P	K	W
11	APR012203W	Power system operation and control	2					K1APR_ASE_W8	30	90	3	2,1	T	E			K	W
12	APR012203L	Power system operation and control			1			K1APR_ASE_U9 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
13	APR012302W	Static converters in electric power engineering	1					K1APR_ASE_W9 K1APR_K9	15	30	1	0,7	T	Z			K	W
14	APR012302L	Static converters in electric power engineering			1			K1APR_ASE_U8 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
15	APR012504W	Smart Metering	2					K1APR_ASE_W5 K1APR_K1	30	30	1	0,7	T	Z			K	W
16	APR012504L	Smart Metering			1			K1APR_ASE_U5 K1APR_K1	15	30	1	0,7	T	Z		P	K	W
17	APR012505W	Distributed control systems for electric power	2					K1APR_ASE_W6	30	60	2	1,4	T	Z			K	W
18	APR012505S	Distributed control systems for electric power					1	K1APR_ASE_U6 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
Total			13	0	7	2	2		360	810	27	18,9						

4.2.3.4. Training block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR010055Q	Professional practice (6-week)				40		K1APR_U34 K1APR_K3	240	180	6	4,2	T	Z		P	K	W
Total			0	0	0	40	0		240	180	6	4,2						

4.2.3.5. Diploma dissertation block

No.	Course code	Name of course	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points		Form of course	Way of creditin g	Course			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			universit y-wide	practical	kind	type
1	APR011059D APR012059D APR013059D	Engineering Thesis				9		K1APR_AMPU_U10 K1APR_K5	135	450	15	10,5	T	Z		P	K	W
2	APR013058S	Diploma seminar					2	K1APR_AMPU_U9 K1APR_K9	30	90	3	2,1	T	Z		P	K	W
3	APR011059D APR012059D APR013059D	Engineering Thesis				9		K1APR_ASE_U11 K1APR_K5	135	450	15	10,5	T	Z		P	K	W
4	APR012058S	Diploma seminar					2	K1APR_ASE_U10 K1APR_K9	30	90	3	2,1	T	Z		P	K	W
Total			0	0	0	9	2		165	540	18	12,6						

Altogether for main-field-of-study blocks

	Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points
	lec	cl	lab	pr	sem				
Professional practice (6-week)	0	0	0	40	0	240	180	6	4,2
AMU	11	0	12	9	3	525	1350	45	31,5
ASE	13	0	7	11	4	525	1350	45	31,5

4.3 Training module (Faculty Council resolution on principles of crediting training – attachment no.2)

Name of training:	Professional practice (6-week)		
Number of ECTS points	Number of ECTS points for BK classes	Training crediting mode	Code
6	4,2	report from training	APR010055Q
Training duration	Training objective		
6 weeks	<p>The goal of practice is to gain industrial experience, familiarize yourself with basic technical equipment and technological facilities, to acquaint himself with the work of higher technical inspection in a company. In particular:</p> <ul style="list-style-type: none"> • broaden the knowledge gained at university and develop the skills to use it, • familiarize students with specific professional environment, • developing specific skills directly related to the setting of the internship, • develop skills to communicate effectively, • knowledge of organizational structure, the principles of the work organization and the sharing of responsibilities, procedures, work planning, control, • improve the skills of self-organization, teamwork, effective time management, diligence, responsibility for assigned tasks, • improve the ability to use a foreign language in professional contexts 		

4.4. Diploma dissertation module

Type of diploma dissertation:	inżynier	
Number of diploma dissertation semesters	Number of ECTS points	Code
1	18	APR012058S APR013058S APR011059D APR012059D APR013059D
Character of diploma dissertation		
Design, computer program, computer simulations and its analysis, a prototype of a simple technical system and the results of the experimental studies on it, the development of a technical documentation for the designed and/or build piece of equipment.		
Number of BK ECTS points:	12,6	

5. Ways of verifying assumed learning outcomes

Type of classes	Ways of verifying assumed learning outcomes
lecture	examination, progress/final test
class	progress/final test
laboratory	pretest, report from laboratory
project	project defence
seminar	participation in discussion, topic presentation, essay
training	report from training
diploma dissertation	prepared diploma dissertation

6. Range of diploma dissertation

The diploma examination problems are available on the Faculty website.

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

No.	Course code	Name of course	Crediting by deadline of... (number of semester)
1			
2			
3			
4			

8. Plan of studies (attachment no.1 to description of the program of studies)

Approved by faculty student government legislative body:

.....
Date

.....
Name and surname, signature of student representative

.....
Date

.....
Dean's signature