

PLAN OF STUDIES

FACULTY:	Electrical Engineering
MAIN FIELD OF STUDY:	Industrial Control Engineering
EDUCATION LEVEL:	1st level, 1st level studies
FORM OF STUDIES:	full-time
PROFILE:	general academic
SPECIALIZATION:	
LANGUAGE OF STUDY:	polish

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

Semester 1

Obligatory courses

number of ECTS points: 29

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			universit y-wide	practical	kind	type
1	APR011312W	Fundamentals of electrical engineering	2					K1APR_W16 K1APR_K4	30	90	3	2,1	T	Z			K	OB
2	APR011312C	Fundamentals of electrical engineering		1				K1APR_U14 K1APR_K4	15	60	2	1,4	T	Z		P	K	OB
3	APR013301W	Basics of Metrology	2					K1APR_W19	30	90	3	2,1	T	Z			K	OB
4	APR013301L	Basics of Metrology			1			K1APR_U5 K1APR_U17 K1APR_K5	15	60	2	1,4	T	Z		P	K	OB
5	FZP003067W	Physics E5	2					K1APR_W6 K1APR_K4	30	120	4	2,8	T	E	O		PD	OB
6	FZP003067C	Physics E5		1				K1APR_U4 K1APR_K4	15	30	1	0,7	T	Z	O	P	PD	OB
7	INR052501W	Computer technology	1					K1APR_W11 K1APR_K4	15	30	1	0,7	T	Z			KO	OB
8	INR052501L	Computer technology			1			K1APR_U9 K1APR_K4	15	30	1	0,7	T	Z		P	KO	OB
9	MAT001736W	Algebra and Analytic Geometry	2					K1APR_W1 K1APR_K3 K1APR_K7	30	60	2	1,4	T	E	O		PD	OB
10	MAT001736C	Algebra and Analytic Geometry		1				K1APR_U1 K1APR_K3 K1APR_K7	15	60	2	1,4	T	Z	O	P	PD	OB
11	MAT001737W	Mathematical Analysis 1	2					K1APR_W2 K1APR_K3 K1APR_K7	30	150	5	3,5	T	E	O		PD	OB
12	MAT001737C	Mathematical Analysis 1		2				K1APR_U2 K1APR_K3 K1APR_K7	30	90	3	2,1	T	Z	O	P	PD	OB
Total			11	5	2				270	870	29	20,3						

Optional courses

minimum 15

hours in semester,

1

ECTS points

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			universit y-wide	practical	kind	type
Optional courses block: Philosophy and Ethics									ECTS		1	hours		1				
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

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
lec	cl	lab	pr	sem				
12	5	2	0	0	285	900	30	21

Semester 2

Obligatory courses

number of ECTS points: 30

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			universit y-wide	practical	kind	type
1	APR011302W	Electric circuits	2					K1APR_W17	30	90	3	2,1	T	E			K	OB
2	APR011302C	Electric circuits		2				K1APR_U15 K1APR_K1 K1APR_K4	30	90	3	2,1	T	Z		P	K	OB
3	APR011303W	Computer networks	1					K1APR_W11 K1APR_W12 K1APR_W14	15	30	1	0,7	T	Z			PD	OB
4	APR011303L	Computer networks			1			K1APR_U9 K1APR_U10 K1APR_U12 K1ARR_K1	15	30	1	0,7	T	Z		P	PD	OB
5	APR012502W	Programming in the C language	2					K1APR_W12	30	60	2	1,4	T	Z			PD	OB
6	APR012502L	Programming in the C language			2			K1APR_U10 K1APR_K4	30	60	2	1,4	T	Z		P	PD	OB
7	APR013302W	Basics of Electronics 1	2					K1APR_W20 K1APR_K1	30	60	2	1,4	T	Z			K	OB
8	FZP003068W	Physics G5	2					K1APR_W7	30	120	4	2,8	T	E	O		PD	OB
9	FZP003068L	Physics G5			1			K1APR_U4 K1APR_U5 K1APR_K9	15	30	1	0,7	T	Z	O	P	PD	OB
10	GFR053101W	Engineering graphics	1					K1APR_W9	15	60	2	1,4	T	Z			K	OB
11	GFR053101L	Engineering graphics			2			K1APR_U7 K1APR_K1	30	60	2	1,4	T	Z		P	K	OB
12	MAT001738W	Mathematical Analysis 2	2					K1APR_W3 K1APR_K3 K1APR_K7	30	120	4	2,8	T	E	O		PD	OB
13	MAT001738C	Mathematical Analysis 2		2				K1APR_U3 K1APR_K3 K1APR_K7	30	90	3	2,1	T	Z	O	P	PD	OB
Total			12	4	6				330	900	30	21						

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
lec	cl	lab	pr	sem				
12	4	6	0	0	330	900	30	21

Semester 3

Obligatory courses

number of ECTS points: 26

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			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	APR011304W	Electrical and Magnetic Circuits	3					K1APR_W16 K1APR_W17 K1APR_W18	45	150	5	3,5	T	E			K	OB
4	APR011304C	Electrical and Magnetic Circuits		1				K1APR_U15 K1APR_U16 K1APR_K3	15	60	2	1,4	T	Z		P	K	OB
5	APR012301W	Electrical Devices and Power Substations	2					K1APR_W24 K1APR_K1	30	60	2	1,4	T	Z			K	OB
6	APR013238W	Fundamentals of microprocessors 1	1					K1APR_W29 K1APR_K3	15	60	2	1,4	T	Z			K	OB
7	APR013238L	Fundamentals of microprocessors 1			1			K1APR_U25 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
8	APR013303L	Basics of Electronics 2			2			K1APR_U18 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
9	APR013304W	Sensors and Transducers	1					K1APR_W21 K1APR_K3	15	60	2	1,4	T	E			K	OB
10	APR013304L	Sensors and Transducers			1			K1APR_U19 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
11	MAT001500W	Ordinary differential equations A	2					K1APR_W4 K1APR_K1	30	90	3	2,1	T	Z	O		PD	OB
12	MMM012014W	Mechanics and strength of materials	2					K1APR_W10 K1APR_K1	30	60	2	1,4	T	Z			K	OB
13	MMM012014C	Mechanics and strength of materials		1				K1APR_U8 K1APR_K1	15	30	1	0,7	T	Z		P	K	OB
Total			13	2	5				300	780	26	18,2						

Optional courses

minimum 90

hours in semester,

4

ECTS points

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			universit y-wide	practical	kind	type
Optional courses block: Database								ECTS		2		hours		2				
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
Optional courses block: Foreign Language								ECTS		2		hours		4				
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

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
lec	cl	lab	pr	sem				
14	6	5	1	0	390	900	30	21

Semester 4

Obligatory courses

number of ECTS points: 27

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			universit y-wide	practical	kind	type
1	APR012101W	Fundamentals of control engineering 1	2					K1APR_W23	30	120	4	2,8	T	E			K	OB
2	APR012101C	Fundamentals of control engineering 1		2				K1APR_U21 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
3	APR012401W	Electrical safety	1					K1APR_W36 K1APR_K3	15	30	1	0,7	T	Z			K	OB
4	APR012401L	Electrical safety			1			K1APR_U32 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
5	APR012503W	Electric power systems	2					K1APR_W15 K1APR_W25 K1APR_K5	30	60	2	1,4	T	Z			K	OB
6	APR013102W	Electrical machines 1	2					K1APR_W26 K1APR_K3	30	90	3	2,1	T	E			K	OB
7	APR013239L	Fundamentals of microprocessors 2			2			K1APR_U25 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
8	APR013305W	Industrial Measurement	2					K1APR_W22 K1APR_K2	30	90	3	2,1	T	E			K	OB
9	APR013305L	Industrial Measurement			2			K1APR_U20 K1APR_K2	30	60	2	1,4	T	Z		P	K	OB
10	APR011308W	Digital signal processing 1	1					K1APR_W32 K1APR_K4	15	30	1	0,7	T	Z			K	OB
11	ARE009001W	Basics of robotics	2					K1APR_W33 K1APR_K4	30	60	2	1,4	T	Z			K	OB
12	ARE009001L	Basics of robotics			1			K1APR_U29 K1APR_K4	15	30	1	0,7	T	Z		P	K	OB
13	MAT001501W	Applied statistics	2					K1APR_W5 K1APR_K1	30	90	3	2,1	T	Z	O		PD	OB
Total			14	2	6				330	810	27	18,9						

Optional courses

minimum **60** hours in semester, **3** ECTS points

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			universit y-wide	practical	kind	type
Optional courses block: Foreign Language									ECTS		3	hours		4				
1	JZL100708BKC	Foreign language B2 or C1		4				K1APR_U33 K1APR_K1 K1APR_K8	60	90	3	2,1	T	Z	O	P	KO	W

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
lec	cl	lab	pr	sem				
14	6	6	0	0	390	900	30	21

Semester 5

Obligatory courses

number of ECTS points: 28

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			universit y-wide	practical	kind	type
1	APR011311P	Digital signal processing 2				2		K1APR_U28 K1APR_K3 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
2	APR012102W	Fundamentals of control engineering 2	2					K1APR_W23	30	90	3	2,1	T	E			K	OB
3	APR012102C	Fundamentals of control engineering 2		1				K1APR_U21 K1APR_K5	15	30	1	0,7	T	Z		P	K	OB
4	APR012102L	Fundamentals of control engineering 2			2			K1APR_U21 K1APR_K5	30	60	2	1,4	T	Z		P	K	OB
5	APR012103W	Methods and Algorithms of Digital Control Systems	2					K1APR_W23 K1APR_W31 K1APR_K3	30	60	2	1,4	T	Z			K	OB
6	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
7	APR013103L	Electrical machines 2			2			K1APR_U22 K1APR_K6	30	60	2	1,4	T	Z		P	K	OB
8	APR013202W	Programmable Logic Controllers	1					K1APR_W30 K1APR_K3	15	30	1	0,7	T	Z			K	OB
9	APR013202L	Programmable Logic Controllers			2			K1APR_U26 K1APR_K3	30	60	2	1,4	T	Z		P	K	OB
10	APR013204W	Programming in MATLAB	1					K1APR_W13	15	60	2	1,4	T	Z			PD	OB
11	APR013204L	Programming in MATLAB			2			K1APR_U11 K1APR_K3 K1APR_K4 K1APR_K5	30	60	2	1,4	T	Z		P	PD	OB
12	APR013205W	Electrical Drive 1	2					K1APR_W27	30	90	3	2,1	T	E			K	OB
13	APR013205C	Electrical Drive 1		1				K1APR_U23 K1APR_K3	15	60	2	1,4	T	Z		P	K	OB
14	APR013206W	Power electronics 1	2					K1APR_W28 K1APR_K1	30	60	2	1,4	T	Z			K	OB
Total			10	2	9	2			345	840	28	19,6						

Optional courses			minimum					60	hours in semester,				2	ECTS points				
No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			universit y-wide	practical	kind	type
Optional courses block: Law								ECTS		1		hours		1				
1	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
2	PRH051911W	Intellectual Property Law	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
3	PRR051206W	Protection of intellectual property	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
4	PRR051207W	Protection of intellectual property in engineering activity	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
5	PRR051208W	Patent and copyright	1					K1APR_W39 K1APR_K10	15	30	1	0,7	T	Z	O		KO	W
Optional courses block: Sports								ECTS		0		hours		2				
1	WFW000000BKC	Sporting classes		2				K1APR_K8	30	30	0	0	T	Z	O	P	KO	W
Optional courses block: Management								ECTS		1		hours		1				
1	ZMR052507W	Management bases	1					K1APR_W38 K1APR_K2 K1APR_K4	15	30	1	0,7	T	Z	O		KO	W
2	ZMR052508W	Marketing management	1					K1APR_W38 K1APR_K2 K1APR_K4	15	30	1	0,7	T	Z	O		KO	W
3	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

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
lec	cl	lab	pr	sem				
12	4	9	2	0	405	930	30	21

Semester 6

Obligatory courses

number of ECTS points: 7

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			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	APR013207L	Electrical Drive 2			2			K1APR_U23 K1APR_K3 K1APR_K4	30	30	1	0,7	T	Z		P	K	OB
4	APR013208L	Power electronics 2			2			K1APR_U24 K1APR_K5	30	30	1	0,7	T	Z		P	K	OB
5	APR013209W	Drives of robots and machine tools	2					K1APR_W34	30	30	1	0,7	T	Z			K	OB
6	APR013209L	Drives of robots and machine tools			1			K1APR_U30 K1APR_K2 K1APR_K3	15	30	1	0,7	T	Z		P	K	OB
Total			3		5	2			150	210	7	4,9						

Optional courses

minimum AMU 480
minimum ASE 495

hours in semester,

23

ECTS points

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			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
Optional courses block: Sports									ECTS		0		hours		2			
1	WFW000000BKC	Sporting classes		2				K1APR_K8	30	30	0	0	T	Z	O	P	KO	W
Optional courses block: Social Sciences and Ethics									ECTS		2		hours		1			
1	PSH050611S	The basis of negotiations					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
2	PSH050711S	Selfpresentation					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
3	PSH050911S	Self among others					1	K1APR_U35 K1APR_K9	15	60	2	1,4	T	Z	O	P	KO	W
Optional courses block: Automation of Machines, Vehicles and Apparatus									ECTS		15		hours		13			
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	APR013306W	Analogue and Digital Measurement Systems	1					K1APR_AMPU_W2 K1APR_K9	15	30	1	0,7	T	Z			K	W
8	APR013306L	Analogue and Digital Measurement Systems			2			K1APR_AMPU_U2 K1APR_K9	30	30	1	0,7	T	Z		P	K	W

Optional courses block: Automation and Control in Electrical Power Systems										ECTS		15	hours		14			
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	APR012201W	Optoelectronic	1					K1APR_ASE_W2 K1APR_K9	15	30	1	0,7	T	Z			K	W
6	APR012201L	Optoelectronic			1			K1APR_ASE_U2 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
7	APR012202W	Power system protection - fundamentals	2					K1APR_ASE_W3	30	90	3	2,1	T	E			K	W
8	APR012202L	Power system protection - fundamentals			1			K1APR_ASE_U3 K1APR_K9	15	60	2	1,4	T	Z		P	K	W
9	APR012504W	Smart Metering	2					K1APR_ASE_W5 K1APR_K1	30	30	1	0,7	T	Z			K	W
10	APR012504L	Smart Metering			1			K1APR_ASE_U5 K1APR_K1	15	30	1	0,7	T	Z		P	K	W

Altogether in semester

Obligatory
Professional practice (6-week)
Sporting classes
Social
AMU
ASE

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				
3	0	5	2	0	150	210	7	4,9
0	0	0	40	0	240	180	6	4,2
0	2	0	0	0	30	30	0	0
0	0	0	0	1	15	60	2	1,4
6	0	7	0	0	195	450	15	10,5
7	0	5	2	0	210	450	15	10,5

Semester 7

Optional courses							minimum AMU	330					hours in semester,	30	ECTS points			
							minimum ASE	315										
No.	Course code	Name of course	Weekly number of hours					Field-of-study educational 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			universit y-wide	practical	kind	type
Optional courses block: Automation of Machines, Vehicles and Apparatus								ECTS		30		hours		22				
1	APR011059DP APR012059DP APR013059DP	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	APR013213W	Industrial drive systems	2					K1APR_AMPU_W4 K1APR_K9	30	60	2	1,4	T	Z			K	W
4	APR013213S	Industrial drive systems				1		K1APR_AMPU_U4 K1APR_K1	15	30	1	0,7	T	Z		P	K	W
5	APR013214W	Artificial intelligence methods	2					K1APR_AMPU_W6	30	90	3	2,1	T	E			K	W
6	APR013214L	Artificial intelligence methods			1			K1APR_AMPU_U6 K1APR_K3 K1APR_K4 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
7	APR013215W	Distributed automation systems	1					K1APR_AMPU_W7 K1APR_K9	15	30	1	0,7	T	Z			K	W
8	APR013215L	Distributed automation systems			2			K1APR_AMPU_U7 K1APR_K9	30	60	2	1,4	T	Z		P	K	W
9	APR013219L	Computer-aided design of industrial drives			2			K1APR_AMPU_U8 K1APR_K1	30	60	2	1,4	T	Z		P	K	W
Optional courses block: Automation and Control in Electrical Power Systems								ECTS		30		hours		21				
1	APR011059DP APR012059DP APR013059DP	Engineering Thesis				9		K1APR_ASE_U11 K1APR_K5	135	450	15	10,5	T	Z		P	K	W
2	APR012058S	Diploma seminar				2		K1APR_ASE_U10 K1APR_K9	30	90	3	2,1	T	Z		P	K	W
3	APR012107W	Decision making methods	1					K1APR_ASE_W7	15	60	2	1,4	T	Z			K	W
4	APR012107S	Decision making methods				1		K1APR_ASE_U7 K1APR_K3 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
5	APR012203W	Power system operation and control	2					K1APR_ASE_W8	30	90	3	2,1	T	E			K	W
6	APR012203L	Power system operation and control			1			K1APR_ASE_U9 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
7	APR012302W	Static converters in electric power engineering	1					K1APR_ASE_W9 K1APR_K9	15	30	1	0,7	T	Z			K	W
8	APR012302L	Static converters in electric power engineering			1			K1APR_ASE_U8 K1APR_K9	15	30	1	0,7	T	Z		P	K	W
9	APR012505W	Distributed control systems for electric power	2					K1APR_ASE_W6	30	60	2	1,4	T	Z			K	W
10	APR012505S	Distributed control systems for electric power				1		K1APR_ASE_U6 K1APR_K9	15	30	1	0,7	T	Z		P	K	W

Altogether in semester

AMU
ASE

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				
5	0	5	9	3	330	900	30	21
6	0	2	9	4	315	900	30	21

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
FZP003067W	Physics E5	1
MAT001736W	Algebra and Analytic Geometry	1
MAT001737W	Mathematical Analysis 1	1
APR011302W	Electric circuits	2
FZP003068W	Physics G5	2
MAT001738W	Mathematical Analysis 2	2
APR011304W	Electrical and Magnetic Circuits	3
APR013304W	Sensors and Transducers	3
APR012101W	Fundamentals of control engineering 1	4
APR013102W	Electrical machines 1	4
APR013305W	Industrial Measurement	4
APR012102W	Fundamentals of control engineering 2	5
APR013205W	Electrical Drive 1	5
APR012105W	Control Apparatus and Systems (ASE)	6
APR012202W	Power system protection - fundamentals (ASE)	6
APR013210W	Monitoring and diagnostic systems in industry (AMPU)	6
APR013212W	Controlled Electrical Drives - fundamentals (AMPU)	6
APR012203W	Power system operation and control (ASE)	7
APR013214W	Artificial intelligence methods (AMPU)	7

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

Semester	Allowable deficit of ECTS points after semester
1	11
2	13
3	12
4	9
5	6
6	0

Opinion of student government legislative body

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Date

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Name and surname, signature of student representative

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Date

.....
Dean's signature