PROGRAMME OF STUDIES

1. Description

Number of semesters: 7	*Number ECTS points necessary to obtain qualifications: 210*
Prerequisites: *The basis of the enrollment decision is an RECRUITING FACTOR. It is 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.*	*Upon completion of studies graduate obtains* *professional degree of: Bachelor (Engineer)* *1st level qualifications*
Possibility of continuing studies: 2nd level studies	*Graduate profile, employability:* *A Graduate in the field Electrical Engineering has the skills: to use of the acquired knowledge in practice, to communicate within workplace environment, to actively participate in group work, management and leading a team , business ownership, and dealing with the legal and economic issues. It has skills in using computer-aided design methods in the field of electrical installations and grids, protection of electrical equipment, and the operation of technological equipment, switching devices, protective devices, control and measurement units. He is prepared to work in factories and planning and design departments. He is prepared to start second level studies.*
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. Fields of science and scientific disciplines to which educational effects apply:

sicence field: technical sciences, science discipline: Electrical Engineering

3. Concise analysis of consistency between assumed educational effects and labour market needs:

Learning effects refer not only to the broadly understood electrical engineering, i.e. the generation, transmission, distribution, transforming, and utilization of electrical energy, but due to the demands of modern techniques and technologies currently used in electrical power engineering and industry - include electronic and microprocessor technology , computer science, management, and marketing. Obtaining the intended learning effects will enable graduates to find attractive and interesting work in all industries, especially in the electrical power engineering sector. The graduate is also prepared to start business in electrical engineering field. Proceedings on the educational effects were refereed and discussed at meetings of the Faculty of Electrical Engineering Convent, including representatives of industrial enterprises in the Polish territory, with particular emphasis on the Lower Silesia and the neighboring provinces. During meetings the needs of labor market were explained and discussed.

4. List of education modules:

4.1. List of obligatory modules

4.1.1. List of general education modules

4.1.1.1. Liberal-managerial subjects module

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			university-wide	practical	kind	type

4.1.1.2. Foreign languages module

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			university-wide	practical	kind	type

4.1.1.3. Sporting classes module

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			university-wide	practical	kind	type

4.1.1.4. Information technologies module

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			university-wide	practical	kind	type
1	INR042501W	Computer Technology	1					K1ETK_W14 K1ETK_K06	15	30	1	0,7	T	Z			KO	OB
2	INR042501L	Computer Technology			1			K1ETK_U11 K1ETK_K06	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 modules

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 modules

4.1.2.1. Mathematics module

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			university-wide	practical	kind	type
1	ELR041304W	Mathematical methods in electrical engineering	1					K1ETK_W02 K1ETK_W19 K1ETK_K05	15	30	1	0,7	T	Z			PD	OB
2	ELR041304C	Mathematical methods in electrical engineering		1				K1ETK_U01 K1ETK_U02 K1ETK_U16 K1ETK_K05	15	30	1	0,7	T	Z		P	PD	OB
3	ELR041305W	Numerical methods	1					K1ETK_W07 K1ETK_W15 K1ETK_K05 K1ETK_K06	15	30	1	0,7	T	Z			PD	OB
4	ELR041305P	Numerical methods				2		K1ETK_U05 K1ETK_U12 K1ETK_K05 K1ETK_K06	30	60	2	1,4	T	Z		P	PD	OB
5	MAT001409W	Algebra and analytic geometry A	2					K1ETK_W01 K1ETK_K05 K1ETK_K07	30	60	2	1,4	T	E	O		PD	OB
6	MAT001409C	Algebra and analytic geometry A		1				K1ETK_U01 K1ETK_K05 K1ETK_K07	15	60	2	1,4	T	Z	O	P	PD	OB
7	MAT001416W	Mathematical Analysis 1.1 A	2					K1ETK_W02 K1ETK_K05 K1ETK_K07	30	150	5	3,5	T	E	O		PD	OB
8	MAT001416C	Mathematical Analysis 1.1 A		2				K1ETK_U02 K1ETK_K05 K1ETK_K07	30	90	3	2,1	T	Z	O	P	PD	OB
9	MAT001423W	Mathematical Analysis 2.1 A	2					K1ETK_W03 K1ETK_K05 K1ETK_K07	30	120	4	2,8	T	E	O		PD	OB
10	MAT001423C	Mathematical Analysis 2.1 A		2				K1ETK_U03 K1ETK_K05 K1ETK_K07	30	90	3	2,1	T	Z	O	P	PD	OB
11	MAT001434W	Elements of Vector Analysis	1					K1ETK_W04 K1ETK_K04	15	60	2	1,4	T	Z	O		PD	OB
12	MAT001434C	Elements of Vector Analysis		1				K1ETK_U04 K1ETK_K04	15	60	2	1,4	T	Z	O	P	PD	OB
13	MAT001500W	Ordinary Differential Equations A	2					K1ETK_W05 K1ETK_K04	30	90	3	2,1	T	Z	O		PD	OB
14	MAT001501W	Applied Statistics	2					K1ETK_W06 K1ETK_K04	30	90	3	2,1	T	Z	O		PD	OB
		Total	13	7	0	2	0		330	1020	34	23,8						

4.1.2.2. Physics module

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			university-wide	practical	kind	type
1	FZP003069W	Physics A5	2					K1ETK_W08 K1ETK_K06	30	120	4	2,8	T	E	O		PD	OB
2	FZP003069C	Physics A5		1				K1ETK_U06 K1ETK_K06	15	30	1	0,7	T	Z	O	P	PD	OB
3	FZP003070W	Physics C5	2					K1ETK_W09	30	120	4	2,8	T	E	O		PD	OB
4	FZP003070L	Physics C5			1			K1ETK_U06 K1ETK_U07 K1ETK_K09	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 module

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			university-wide	practical	kind	type

4.1.2.4. Computer science module

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			university-wide	practical	kind	type
1	ELR042102W	Computer engineering – digital modelling	1					K1ETK_W07 K1ETK_W20	15	30	1	0,7	T	Z			PD	OB
2	ELR042102P	Computer engineering – digital modelling				1		K1ETK_U17 K1ETK_K01 K1ETK_K05	15	30	1	0,7	T	Z		P	PD	OB
3	ELR042502W	Programming in the C language	2					K1ETK_W15	30	60	2	1,4	T	Z			PD	OB
4	ELR042502L	Programming in the C language			2			K1ETK_U12 K1ETK_K06	30	60	2	1,4	T	Z		P	PD	OB
5	ELR042505W	Informatics in electrical engineering.	1					K1ETK_W20 K1ETK_K05	15	30	1	0,7	T	Z			PD	OB
6	ELR042505P	Informatics in electrical engineering.				1		K1ETK_U18 K1ETK_K05	15	30	1	0,7	T	Z		P	PD	OB
		Total	4	0	2	2	0		120	240	8	5,6						

Altogether for basic sciences modules

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				
21	8	3	4	0	540	1560	52	36,4

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

4.1.3.1. Obligatory main-field-of-study module

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			university-wide	practical	kind	type
1	ELR041101W	High voltage technology 1	2					K1ETK_W10 K1ETK_W23 K1ETK_K09	30	90	3	2,1	T	E			K	OB
2	ELR041102L	High voltage technology 2			2			K1ETK_U20 K1ETK_K09	30	60	2	1,4	T	Z		P	K	OB
3	ELR041201W	Fundamentals of Materials Engineering 1	2					K1ETK_W10 K1ETK_K05	30	120	4	2,8	T	Z			K	OB
4	ELR041202L	Fundamentals of Materials Engineering 2			2			K1ETK_U06 K1ETK_U07 K1ETK_U08 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
5	ELR041301W	Circuits Theory 1	2					K1ETK_W16	30	90	3	2,1	T	E			K	OB
6	ELR041301C	Circuits Theory 1		2				K1ETK_U14 K1ETK_K04 K1ETK_K06	30	60	2	1,4	T	Z		P	K	OB
7	ELR041302W	Electromagnetic field theory	2					K1ETK_W04 K1ETK_W09 K1ETK_W18 K1ETK_K04	30	120	4	2,8	T	E			K	OB
8	ELR041302C	Electromagnetic field theory		2				K1ETK_U04 K1ETK_U06 K1ETK_U15 K1ETK_K04	30	60	2	1,4	T	Z		P	K	OB
9	ELR041303W	Circuits Theory 2	2					K1ETK_W16 K1ETK_W17	30	90	3	2,1	T	E			K	OB
10	ELR041303C	Circuits Theory 2		2				K1ETK_U14 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
11	ELR041303L	Circuits Theory 2			2			K1ETK_U19 K1ETK_K05	30	30	1	0,7	T	Z		P	K	OB
12	ELR042101W	Fundamentals of control engineering 1	2					K1ETK_W05 K1ETK_W27 K1ETK_K05	30	90	3	2,1	T	E			K	OB
13	ELR042101C	Fundamentals of control engineering 1		1				K1ETK_U14 K1ETK_U24 K1ETK_K05	15	30	1	0,7	T	Z		P	K	OB
14	ELR042103W	Fundamentals of control engineering 2	2					K1ETK_W27	30	60	2	1,4	T	E			K	OB
15	ELR042103C	Fundamentals of control engineering 2		1				K1ETK_U24 K1ETK_K05	15	30	1	0,7	T	Z		P	K	OB
16	ELR042103L	Fundamentals of control engineering 2			2			K1ETK_U14 K1ETK_U24 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
17	ELR042301W	Electrical Devices 1	2					K1ETK_W28 K1ETK_W29 K1ETK_K04	30	90	3	2,1	T	E			K	OB
18	ELR042302W	Electrical Devices 2	1					K1ETK_W28 K1ETK_W29	15	60	2	1,4	T	E			K	OB
19	ELR042302L	Electrical Devices 2			2			K1ETK_U25 K1ETK_K05 K1ETK_K09	30	60	2	1,4	T	Z		P	K	OB

20	ELR042303W ELR043202W	Power electronics 1	2					K1ETK_W25 K1ETK_K01	30	60	2	1,4	T	Z			K	OB
21	ELR042304L ELR043204L	Power electronics 2			2			K1ETK_U30 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
22	ELR042305P	Electrical Devices 3				1		K1ETK_U26 K1ETK_K05 K1ETK_K09	15	30	1	0,7	T	Z		P	K	OB
23	ELR042401W	Systems of protection against electric shock	1					K1ETK_W32 K1ETK_K05 K1ETK_K06	15	30	1	0,7	T	Z			K	OB
24	ELR042401L	Systems of protection against electric shock			2			K1ETK_U29 K1ETK_K05 K1ETK_K06	30	60	2	1,4	T	Z		P	K	OB
25	ELR042503W	Electric energy generation	2					K1ETK_W11 K1ETK_K04	30	60	2	1,4	T	Z			K	OB
26	ELR042504W	Electric Power Systems 1	2					K1ETK_W33 K1ETK_K05	30	60	2	1,4	T	Z			K	OB
27	ELR042506W	Electric Power Systems 2	1					K1ETK_W33	15	30	1	0,7	T	E			K	OB
28	ELR042506L	Electric Power Systems 2			2			K1ETK_U22 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
29	ELR043101W	Egineering graphics	1					K1ETK_W12	15	60	2	1,4	T	Z			K	OB
30	ELR043101L	Egineering graphics			2			K1ETK_U09 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
31	ELR043102W	Electrical Machines 1	2					K1ETK_W30 K1ETK_K08	30	60	2	1,4	T	Z			K	OB
32	ELR043103W	Electrical Machines 2	1					K1ETK_W30	15	60	2	1,4	T	E			K	OB
33	ELR043103L	Electrical Machines 2			2			K1ETK_U27 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
34	ELR043104L	Electrical Machines 3			1			K1ETK_U27 K1ETK_K05	15	30	1	0,7	T	Z		P	K	OB
35	ELR043201W	Fundamentals of microprocessors	1					K1ETK_W26 K1ETK_K05	15	30	1	0,7	T	Z			K	OB
36	ELR043201L	Fundamentals of microprocessors			2			K1ETK_U23 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
37	ELR043203W	Electrical Drive	2					K1ETK_W31 K1ETK_K05	30	60	2	1,4	T	Z			K	OB
38	ELR043203L	Electrical Drive			1			K1ETK_U28 K1ETK_K05	15	60	2	1,4	T	Z		P	K	OB
39	ELR043303W	Basics of Electronics 1	2					K1ETK_W24 K1ETK_K04	30	60	2	1,4	T	Z			K	OB
40	ELR043304L	Basics of Electronics 2			2			K1ETK_U21 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
41	ELR043314W	Electrical Metrology 1	1					K1ETK_W21 K1ETK_K08	15	60	2	1,4	T	Z			K	OB
42	ELR043315W	Electrical Metrology 2	2					K1ETK_W22 K1ETK_K05	30	60	2	1,4	T	Z			K	OB
43	ELR043315L	Electrical Metrology 2			1			K1ETK_U19 K1ETK_K05	15	30	1	0,7	T	Z		P	K	OB
44	ELR043316L	Electrical Metrology 3			2			K1ETK_U19 K1ETK_K05	30	60	2	1,4	T	Z		P	K	OB
45	MMM012013W	Technical Mechanics	2					K1ETK_W13 K1ETK_K09	30	60	2	1,4	T	Z			K	OB
46	MMM012013C	Technical Mechanics		1				K1ETK_U10 K1ETK_K09	15	30	1	0,7	T	Z		P	K	OB
		Total	39	9	29	1	0		1170	2730	91	63,7						

Altogether for main-field-of-study modules

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				
39	9	29	1	0	1170	2730	91	63,7

4.2. List of optional modules

4.2.1. List of general education modules

4.2.1.1. Liberal-managerial subjects module

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			university-wide	practical	kind	type
1	FLH050811W	Engineering Ethics	1					K1ETK_W34 K1ETK_K01	15	30	1	0,7	T	Z	O		KO	W
2	FLH051511W	Philosophy of science and technology	1					K1ETK_W34 K1ETK_K01	15	30	1	0,7	T	Z	O		KO	W
3	FLH052011W	Philosophy	1					K1ETK_W34 K1ETK_K01	15	30	1	0,7	T	Z	O		KO	W
4	FLH052111W	Theory of knowledge	1					K1ETK_W34 K1ETK_K01	15	30	1	0,7	T	Z	O		KO	W
5	PRH051311W	Legal and ethical aspects of the work of an engineer	1					K1ETK_W36 K1ETK_K02	15	30	1	0,7	T	Z	O		KO	W
6	PRH051911W	Intellectual Property Law	1					K1ETK_W36 K1ETK_K02	15	30	1	0,7	T	Z	O		KO	W
7	PRR041206W	Protection of intellectual property	1					K1ETK_W36 K1ETK_K02	15	30	1	0,7	T	Z	O		KO	W
8	PRR041207W	Protection of intellectual property in engineering activity	1					K1ETK_W36 K1ETK_K02	15	30	1	0,7	T	Z	O		KO	W
9	PRR041208W	Patent and copyright	1					K1ETK_W36 K1ETK_K02	15	30	1	0,7	T	Z	O		KO	W
10	PSH050611S	The basis of negotiations					1	K1ETK_U33 K1ETK_K09	15	60	2	1,4	T	Z	O	P	KO	W
11	PSH050711S	Selfpresentation					1	K1ETK_U33 K1ETK_K09	15	60	2	1,4	T	Z	O	P	KO	W
12	PSH050911S	Self among others					1	K1ETK_U33 K1ETK_K09	15	60	2	1,4	T	Z	O	P	KO	W
13	ZMR042507W	Bases management	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	15	30	1	0,7	T	Z	O		KO	W
14	ZMR042508W	Marketing management	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	15	30	1	0,7	T	Z	O		KO	W
15	ZMR042509W	Management in the conditions of globalization and regionalization	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	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 module

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			university-wide	practical	kind	type
1	JZL100707BKC	Foreign language B2 or C1		4				K1ETK_U31 K1ETK_K03 K1ETK_K04	60	60	2	1,4	T	Z	O	P	KO	W
2	JZL100708BKC	Foreign language B2 or C1		4				K1ETK_U31 K1ETK_K03 K1ETK_K04	60	90	3	2,1	T	Z	O	P	KO	W
		Total	0	8	0	0	0		120	150	5	3,5						

4.2.1.3. Sporting classes module

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			university-wide	practical	kind	type
1	WFW000000BKC	Sporting classes		2				K1ETK_K03	30	30	0	0	T	Z	O	P	KO	W
		Total	0	2	0	0	0		30	30	0	0						

4.2.1.4. Information technologies module

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			university-wide	practical	kind	type

Altogether for general education modules

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	10	0	0	1	210	330	10	7

4.2.2. List of basic sciences modules

4.2.2.1. Mathematics module

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			university-wide	practical	kind	type

4.2.2.2. Physics module

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			university-wide	practical	kind	type

4.2.2.3. Chemistry module

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			university-wide	practical	kind	type

4.2.2.4. Computer science module

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			university-wide	practical	kind	type
1	ELR041308L	Computer networks			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	15	60	2	1,4	T	Z		P	PD	W
2	ELR041309L	Databases			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	15	60	2	1,4	T	Z		P	PD	W
3	ELR042510L	Object programming			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	15	60	2	1,4	T	Z		P	PD	W
4	ELR043208L	Programming in Delphi			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	15	60	2	1,4	T	Z		P	PD	W
		Total	0	0	1	0	0		15	60	2	1,4						

Altogether for basic sciences modules

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				
0	0	1	0	0	15	60	2	1,4

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

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

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			university-wide	practical	kind	type

4.2.3.2. Optional main-field-of-study subjects - EEN module

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			university-wide	practical	kind	type
1	ELR041306W	Renewable Energy Sources	2					K1ETK_EEN_W02 K1ETK_K04 K1ETK_K06	30	90	3	2,1	T	Z			K	W
2	ELR042104W	Microprocessor techniques in electrical power engineering	1					K1ETK_W26 K1ETK_EEN_W09	15	30	1	0,7	T	Z			K	W
3	ELR042104L	Microprocessor techniques in electrical power engineering			2			K1ETK_U23 K1ETK_EEN_U06 K1ETK_K05 K1ETK_K09	30	60	2	1,4	T	Z		P	K	W
4	ELR042105L	Programmable Logic Controllers			1			K1ETK_U23 K1ETK_EEN_U06 K1ETK_K05	15	60	2	1,4	T	Z		P	K	W
5	ELR042201W	Optoelectronics in control systems	2					K1ETK_EEN_W01 K1ETK_K05	30	90	3	2,1	T	Z			K	W
6	ELR042202W	Power system protection - fundamentals	2					K1ETK_EEN_W04 K1ETK_K09	30	30	1	0,7	T	Z			K	W
7	ELR042202L	Power system protection - fundamentals			1			K1ETK_EEN_U02 K1ETK_K09	15	30	1	0,7	T	Z		P	K	W
8	ELR042203W	Power system operation and control	2					K1ETK_EEN_W07 K1ETK_K09	30	60	2	1,4	T	Z			K	W
9	ELR042203L	Power system operation and control			1			K1ETK_EEN_U04 K1ETK_K09	15	60	2	1,4	T	Z		P	K	W
10	ELR042306W	Intelligent installations	1					K1ETK_EEN_W08	15	30	1	0,7	T	Z			K	W
11	ELR042306L	Intelligent installations			1			K1ETK_EEN_U05 K1ETK_K05 K1ETK_K09	15	60	2	1,4	T	Z		P	K	W
12	ELR042307W	Power substations	2					K1ETK_EEN_W10 K1ETK_K09	30	90	3	2,1	T	E			K	W
13	ELR042402W	Protection against electromagnetic fields	2					K1ETK_EEN_W05	30	30	1	0,7	T	Z			K	W
14	ELR042402L	Protection against electromagnetic fields			1			K1ETK_EEN_U03 K1ETK_K06	15	30	1	0,7	T	Z		P	K	W
15	ELR042403W	Electric power industries	2					K1ETK_EEN_W06 K1ETK_K06 K1ETK_K07	30	30	1	0,7	T	Z			K	W
16	ELR043306W	Assessment of Power Quality	2					K1ETK_EEN_W03	30	60	2	1,4	T	Z			K	W
17	ELR043306L	Assessment of Power Quality			1			K1ETK_EEN_U01 K1ETK_K05	15	30	1	0,7	T	Z		P	K	W
		Total	18	0	8	0	0		390	870	29	20,3						

4.2.3.3. Optional main-field-of-study subjects - ETP module

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			university-wide	practical	kind	type
1	ELR041203W	Fundamentals of applied electrostatics	2					K1ETK_ETP_W01 K1ETK_K08	30	90	3	2,1	T	Z			K	W
2	ELR041204W	Energy-saving technologies in industry	2					K1ETK_ETP_W05 K1ETK_K06	30	30	1	0,7	T	Z			K	W
3	ELR041204L	Energy-saving technologies in industry			1			K1ETK_ETP_U03 K1ETK_K06	15	30	1	0,7	T	Z		P	K	W
4	ELR041205W	Sensors and Transducers	2					K1ETK_ETP_W08 K1ETK_K09	30	60	2	1,4	T	Z			K	W
5	ELR041205L	Sensors and Transducers			1			K1ETK_ETP_U05 K1ETK_K09	15	30	1	0,7	T	Z		P	K	W
6	ELR041307W	Design of electrical installations	1					K1ETK_W32 K1ETK_ETP_W04 K1ETK_K05 K1ETK_K09	15	30	1	0,7	T	Z			K	W
7	ELR041307P	Design of electrical installations				2		K1ETK_U05 K1ETK_U09 K1ETK_U11 K1ETK_U26 K1ETK_U33 K1ETK_ETP_U02 K1ETK_K05 K1ETK_K09	30	90	3	2,1	T	Z		P	K	W
8	ELR042403W	Electric power industries	2					K1ETK_ETP_W06 K1ETK_K06 K1ETK_K07	30	30	1	0,7	T	Z			K	W
9	ELR042404W	Electrical receiver	2					K1ETK_ETP_W07	30	30	1	0,7	T	Z			K	W
10	ELR042404L	Electrical receiver			1			K1ETK_ETP_U04 K1ETK_K05 K1ETK_K09	15	30	1	0,7	T	Z		P	K	W
11	ELR043205W	Automation of Production Processes	1					K1ETK_ETP_W03 K1ETK_K05	15	30	1	0,7	T	Z			K	W
12	ELR043205L	Automation of Production Processes			2			K1ETK_ETP_U01 K1ETK_K05	30	60	2	1,4	T	Z		P	K	W
13	ELR043206W	Testing and diagnostics of electrical machines	2					K1ETK_ETP_W09	30	60	2	1,4	T	Z			K	W
14	ELR043206L	Testing and diagnostics of electrical machines			1			K1ETK_ETP_U06 K1ETK_K05	15	60	2	1,4	T	Z		P	K	W
15	ELR043207W	Controlled Electrical Drives - fundamentals	2					K1ETK_ETP_W10 K1ETK_K04	30	120	4	2,8	T	E			K	W
16	ELR043305W	Power Quality	2					K1ETK_ETP_W02 K1ETK_K05	30	90	3	2,1	T	Z			K	W
		Total	18	0	6	2	0		390	870	29	20,3						

4.2.3.4. Training module

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			university-wide	practical	kind	type
1	ELR040055Q	Professional practice (6-week)				40		K1ETK_U32 K1ETK_K05	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 module

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			university-wide	practical	kind	type
1	ELR041059D ELR042059D ELR043059D	Engineering Thesis				9		K1ETK_EEN_U08 K1ETK_K08	135	450	15	10,5	T	Z		P	K	W
2	ELR042058S	Diploma seminar					2	K1ETK_EEN_U07 K1ETK_K09	30	90	3	2,1	T	Z		P	K	W
3	ELR041058S ELR043058S	Diploma seminar					2	K1ETK_ETP_U07 K1ETK_K09	30	90	3	2,1	T	Z		P	K	W
4	ELR041059D ELR042059D ELR043059D	Engineering Thesis				9		K1ETK_ETP_U08 K1ETK_K08	135	450	15	10,5	T	Z		P	K	W
		Total	0	0	0	9	2		165	540	18	12,6						

Altogether for main-field-of-study modules

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				
18	0	6	51	2	795	1590	53	37,1

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	ELR040055Q
Training duration	Training objective		
6 weeks	The primary objective is to confront the theoretical knowledge acquired during studies, with the real demands of the employers. During internship the student gains industrial experience, learns the basic technical equipment and technologies in a company, gain understanding of the role of higher level technical supervision, in particular: • extends the knowledge gained during studies and develop the skills to use it, • familiarize himself with professional environment specifics, • develops specific skills directly related to the place of internship., • shaping the skills of effective communication, • learns the functioning of the organizational structure, principles of work organization and responsibilities sharing, procedures, work planning, and control process, • improves the ability of self-organization, teamwork, effective time management, diligence, responsibility for assigned tasks, • improves the ability to use a foreign language in professional contexts. A free choice of the place of internship, i.e. a company or an institution from a faculty list of internship places, enables students to pursue their professional interests. A possible result of internship is selection of topics for the future engineering thesis and formulation of an individual title, which generally - in consultation with supervisors - is approved by the Faculty Council for realisation. The practice is often the beginning of the first job.		

4.4. Diploma dissertation module

Type of diploma dissertation:	inżynier	
Number of diploma dissertation semesters	Number of ECTS points	Code
1	18	ELR041058S ELR042058S ELR043058S ELR041059D ELR042059D
Character of diploma dissertation		
The character of Engineering Thesis stresses it usefulness for engineering practice. The purpose is a solution for a given problem in the following areas: design and planning, measurement experiment, development of a computer program and an analysis of some or all of the processes and objects of a technical nature (especially electrical), organization with technical aspects, technical and economic. The work is not only descriptive, contains student's own contribution.		
Number of BK ECTS points:	12,6	

5. Ways of verifying assumed educational effects

Type of classes	Ways of verifying assumed educational effects
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. Total number of ECTS points, which student has to obtain from classes requiring direct academic teacher-student contact (enter total of ECTS points for courses/groups of courses denoted with code BK)

147 ECTS

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

Number of ECTS points for obligatory subjects	52
Number of ECTS points for optional subjects	2
Total number of ECTS points	54

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

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

49 ECTS

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

65 ECTS

11. Range of diploma dissertation

The diploma examination problems are available on the Faculty website.

12. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular modules

No.	Course code	Name of course	Crediting by deadline of... (number of semester)
1	ELR041201W	Fundamentals of Materials Engineering 1	I
2	MAT001409W	Algebra and analytic geometry A	I
3	FZP003069W	Physics A5	I
4	INR042501W	Computer Technology	I
5	MAT001416W	Mathematical Analysis 1.1 A	I
6	ELR043314W	Electrical Metrology 1	I
7	MAT001434W	Elements of Vector Analysis	II
8	ELR041301W	Circuits Theory 1	II
9	MAT001423W	Mathematical Analysis 2.1 A	II
10	ELR041101W	High voltage technology 1	III
11	ELR043102W	Electrical Machines 1	III
12	ELR043303W	Basics of Electronics 1	III
13	MAT001500W	Ordinary Differential Equations A	III
14	ELR042301W	Electrical Devices 1	IV
15	ELR041303W	Circuits Theory 2	IV
16	ELR043103W	Electrical Machines 2	IV
17	ELR042101W	Fundamentals of control engineering 1	V
18	ELR042303W ELR043202W	Power electronics 1	V
19	ELR042504W	Electric Power Systems 1	V
20	ELR042302W	Electrical Devices 2	V
21	ELR043203W	Electrical Drive	V
22	ELR040055Q	Professional practice (6-week)	VI

13. Plan of studies (attachment no.1)

Approved by faculty student government legislative body:

....

Date Name and surname, signature of student representative

....

Date Dean’s signature