PROGRAMME OF STUDIES

1. Description

Number of semesters: 8	*Number ECTS points necessary to obtain qualifications: 240*
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 gained during their studies not only lead to success in future careers of the graduate, but also shapes the human being with a sense of entrepreneurship, creativeness and openness to 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	INR042561W	Computer technology	1					K1ETK_W14 K1ETK_K06	10	27	1	0,7	T	Z			KO	OB
2	INR042561L	Computer technology			1			K1ETK_U11 K1ETK_K06	10	27	1	0,7	T	Z		P	KO	OB
		Total	1	0	1	0	0		20	54	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	20	54	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	ELR041363W	Numerical methods	1					K1ETK_W07 K1ETK_W15 K1ETK_K05 K1ETK_K06	10	54	2	1,4	T	Z			PD	OB
2	ELR041363P	Numerical methods				2		K1ETK_U05 K1ETK_U12 K1ETK_K05 K1ETK_K06	20	54	2	1,4	T	Z		P	PD	OB
3	ELR041367W	Mathematical methods in electrical engineering	1					K1ETK_W02 K1ETK_W19 K1ETK_K05	10	54	2	1,4	T	Z			PD	OB
4	ELR041367C	Mathematical methods in electrical engineering		1				K1ETK_U01 K1ETK_U02 K1ETK_U16 K1ETK_K05	10	54	2	1,4	T	Z		P	PD	OB
5	MAT001464W	Algebra and analytic geometry A	2					K1ETK_W01 K1ETK_K05 K1ETK_K07	22	54	2	1,4	T	E	O		PD	OB
6	MAT001464C	Algebra and analytic geometry A		1				K1ETK_U01 K1ETK_K05 K1ETK_K07	11	54	2	1,4	T	Z	O	P	PD	OB
7	MAT001472W	Mathematical Analysis 1.1 A	2					K1ETK_W02 K1ETK_K05 K1ETK_K07	22	135	5	3,5	T	E	O		PD	OB
8	MAT001472C	Mathematical Analysis 1.1 A		2				K1ETK_U02 K1ETK_K05 K1ETK_K07	22	81	3	2,1	T	Z	O	P	PD	OB
9	MAT001477W	Mathematical Analysis 2.1 A	2					K1ETK_W03 K1ETK_K05 K1ETK_K07	22	108	4	2,8	T	E	O		PD	OB
10	MAT001477C	Mathematical Analysis 2.1 A		2				K1ETK_U03 K1ETK_K05 K1ETK_K07	22	81	3	2,1	T	Z	O	P	PD	OB
11	MAT001483W	Elements of Vector Analysis	1					K1ETK_W04 K1ETK_K04	11	54	2	1,4	T	Z	O		PD	OB
12	MAT001483C	Elements of Vector Analysis		1				K1ETK_U04 K1ETK_K04	11	54	2	1,4	T	Z	O	P	PD	OB
13	MAT001502W	Ordinary Differential Equations A	2					K1ETK_W05 K1ETK_K04	20	81	3	2,1	T	Z	O		PD	OB
14	MAT001503W	Applied Statistics	2					K1ETK_W06 K1ETK_K04	20	81	3	2,1	T	Z	O		PD	OB
		Total	13	7	0	2	0		233	999	37	25,9						

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	FZP003071W	Physics B5	2					K1ETK_W08 K1ETK_K06	22	108	4	2,8	T	E	O		PD	OB
2	FZP003071C	Physics B5		1				K1ETK_U06 K1ETK_K06	11	27	1	0,7	T	Z	O	P	PD	OB
3	FZP003072W	Physics D5	2					K1ETK_W09	22	108	4	2,8	T	E	O		PD	OB
4	FZP003072L	Physics D5			1			K1ETK_U06 K1ETK_U07 K1ETK_K09	11	27	1	0,7	T	Z	O	P	PD	OB
		Total	4	1	1	0	0		66	270	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	ELR042163W	Computer engineering – digital modelling	1					K1ETK_W07 K1ETK_W20	10	27	1	0,7	T	Z			PD	OB
2	ELR042163P	Computer engineering – digital modelling				1		K1ETK_U17 K1ETK_K01 K1ETK_K05	10	27	1	0,7	T	Z		P	PD	OB
3	ELR042565W	Programming in the C language	2					K1ETK_W15	20	54	2	1,4	T	Z			PD	OB
4	ELR042565L	Programming in the C language			2			K1ETK_U12 K1ETK_K06	20	54	2	1,4	T	Z		P	PD	OB
5	ELR042569W	Informatics in electrical engineering	1					K1ETK_W20 K1ETK_K05	10	54	2	1,4	T	Z			PD	OB
6	ELR042569P	Informatics in electrical engineering				1		K1ETK_U18 K1ETK_K05	10	27	1	0,7	T	Z		P	PD	OB
		Total	4	0	2	2	0		80	243	9	6,3						

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	379	1512	56	39,2

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	ELR041161W	High voltage technology 1	2					K1ETK_W10 K1ETK_W23 K1ETK_K09	20	108	4	2,8	T	E			K	OB
2	ELR041162L	High voltage technology 2			2			K1ETK_U20 K1ETK_K09	20	54	2	1,4	T	Z		P	K	OB
3	ELR041261W	Fundamentals of Materials Engineering 1	2					K1ETK_W10 K1ETK_K05	20	108	4	2,8	T	Z			K	OB
4	ELR041262L	Fundamentals of Materials Engineering 2			2			K1ETK_U06 K1ETK_U07 K1ETK_U08 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
5	ELR041361W	Circuits theory 1A	2					K1ETK_W16	20	81	3	2,1	T	Z			K	OB
6	ELR041361C	Circuits theory 1A		1				K1ETK_U14 K1ETK_K04 K1ETK_K06	10	54	2	1,4	T	Z		P	K	OB
7	ELR041362W	Circuits theory 1B	2					K1ETK_W16	20	81	3	2,1	T	E			K	OB
8	ELR041362C	Circuits theory 1B		2				K1ETK_U14 K1ETK_K04 K1ETK_K06	20	54	2	1,4	T	Z		P	K	OB
9	ELR041366W	Electromagnetic field theory	2					K1ETK_W04 K1ETK_W09 K1ETK_W18 K1ETK_K04	20	108	4	2,8	T	E			K	OB
10	ELR041366C	Electromagnetic field theory		2				K1ETK_U04 K1ETK_U06 K1ETK_U15 K1ETK_K04	20	81	3	2,1	T	Z		P	K	OB
11	ELR041368W	Circuits theory 2	2					K1ETK_W16 K1ETK_W17	20	81	3	2,1	T	E			K	OB
12	ELR041368C	Circuits theory 2		2				K1ETK_U14 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
13	ELR041368L	Circuits theory 2			2			K1ETK_U19 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
14	ELR042161W	Fundamentals of control engineering 1	2					K1ETK_W05 K1ETK_W27 K1ETK_K05	20	81	3	2,1	T	E			K	OB
15	ELR042161C	Fundamentals of control engineering 1		1				K1ETK_U14 K1ETK_U24 K1ETK_K05	10	27	1	0,7	T	Z		P	K	OB
16	ELR042162W	Fundamentals of control engineering 2	2					K1ETK_W27	20	108	4	2,8	T	E			K	OB
17	ELR042162C	Fundamentals of control engineering 2		1				K1ETK_U24 K1ETK_K05	10	27	1	0,7	T	Z		P	K	OB
18	ELR042162L	Fundamentals of control engineering 2			2			K1ETK_U14 K1ETK_U24 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
19	ELR042361W	Electrical Devices 1	2					K1ETK_W28 K1ETK_W29 K1ETK_K04	20	81	3	2,1	T	E			K	OB
20	ELR042362W ELR043375W	Power electronics 1	2					K1ETK_W25 K1ETK_K01	20	81	3	2,1	T	Z			K	OB
21	ELR042363L ELR043376L	Power electronics 2			2			K1ETK_U30 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB

22	ELR042364L	Electrical Devices 2			2			K1ETK_U25 K1ETK_K05 K1ETK_K09	20	54	2	1,4	T	Z		P	K	OB
23	ELR042364P	Electrical Devices 2				1		K1ETK_U26 K1ETK_K05 K1ETK_K09	10	27	1	0,7	T	Z		P	K	OB
24	ELR042461W	Systems of protection against electric shock 1	1					K1ETK_W32 K1ETK_K05 K1ETK_K06	10	27	1	0,7	T	Z			K	OB
25	ELR042465L	Systems of protection against electric shock 2			2			K1ETK_U29 K1ETK_K05 K1ETK_K06	20	54	2	1,4	T	Z		P	K	OB
26	ELR042566W	Electric energy generation	2					K1ETK_W11 K1ETK_K04	20	54	2	1,4	T	Z			K	OB
27	ELR042567W	Electric Power Systems 1	2					K1ETK_W33 K1ETK_K05	20	81	3	2,1	T	E			K	OB
28	ELR042568L	Electric Power Systems 2			2			K1ETK_U22 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
29	ELR043161W	Engineering Graphics	1					K1ETK_W12	10	108	4	2,8	T	Z			K	OB
30	ELR043161L	Engineering Graphics			2			K1ETK_U09 K1ETK_K05	20	108	4	2,8	T	Z		P	K	OB
31	ELR043162W	Electrical Machines 1	2					K1ETK_W30 K1ETK_K08	20	108	4	2,8	T	Z			K	OB
32	ELR043163W	Electrical Machines 2	1					K1ETK_W30	10	81	3	2,1	T	E			K	OB
33	ELR043163L	Electrical Machines 2			2			K1ETK_U27 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
34	ELR043164L	Electrical Machines 3			1			K1ETK_U27 K1ETK_K05	10	27	1	0,7	T	Z		P	K	OB
35	ELR043261W	Electrical Drive 1	2					K1ETK_W31 K1ETK_K05	20	54	2	1,4	T	Z			K	OB
36	ELR043263L	Electrical Drive 2			1			K1ETK_U28 K1ETK_K05	10	54	2	1,4	T	Z		P	K	OB
37	ELR043363W	Basics of Electronics 1	2					K1ETK_W24 K1ETK_K04	20	108	4	2,8	T	Z			K	OB
38	ELR043364W	Fundamentals of microprocessors	1					K1ETK_W26 K1ETK_K05	10	27	1	0,7	T	Z			K	OB
39	ELR043364L	Fundamentals of microprocessors			2			K1ETK_U23 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
40	ELR043370L	Basics of Electronics 2			2			K1ETK_U21 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
41	ELR043372W	Electrical Metrology 1	1					K1ETK_W21 K1ETK_K08	10	81	3	2,1	T	Z			K	OB
42	ELR043373W	Electrical Metrology 2	2					K1ETK_W22 K1ETK_K05	20	54	2	1,4	T	Z			K	OB
43	ELR043373L	Electrical Metrology 2			1			K1ETK_U19 K1ETK_K05	10	27	1	0,7	T	Z		P	K	OB
44	ELR043374L	Electrical Metrology 3			2			K1ETK_U19 K1ETK_K05	20	54	2	1,4	T	Z		P	K	OB
45	MMM012012W	Technical Mechanics	2					K1ETK_W13 K1ETK_K09	20	54	2	1,4	T	Z			K	OB
46	MMM012012C	Technical Mechanics		1				K1ETK_U10 K1ETK_K09	10	27	1	0,7	T	Z		P	K	OB
		Total	39	10	29	1	0		790	2970	110	77						

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	10	29	1	0	790	2970	110	77

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	FLH050812W	Engineering Ethics	1					K1ETK_W34 K1ETK_K01	10	27	1	0,7	T	Z	O		KO	W
2	FLH051512W	Philosophy of science and technology	1					K1ETK_W34 K1ETK_K01	10	27	1	0,7	T	Z	O		KO	W
3	FLH052012W	Philosophy	1					K1ETK_W34 K1ETK_K01	10	27	1	0,7	T	Z	O		KO	W
4	FLH052112W	Theory of knowledge	1					K1ETK_W34 K1ETK_K01	10	27	1	0,7	T	Z	O		KO	W
5	PRH051312W	Legal and ethical aspects of the work of an engineer	1					K1ETK_W36 K1ETK_K02	10	54	2	1,4	T	Z	O		KO	W
6	PRH051912W	Intellectual Property Law	1					K1ETK_W36 K1ETK_K02	10	54	2	1,4	T	Z	O		KO	W
7	PRR041263W	Protection of intellectual property	1					K1ETK_W36 K1ETK_K02	10	54	2	1,4	T	Z	O		KO	W
8	PRR041264W	Protection of intellectual property in engineering activity	1					K1ETK_W36 K1ETK_K02	10	54	2	1,4	T	Z	O		KO	W
9	PRR041265W	Patent and copyright	1					K1ETK_W36 K1ETK_K02	10	54	2	1,4	T	Z	O		KO	W
10	PSH050612S	The basis of negotiations					1	K1ETK_U33 K1ETK_K09	10	54	2	1,4	T	Z	O	P	KO	W
11	PSH050712S	Selfpresentation					1	K1ETK_U33 K1ETK_K09	10	54	2	1,4	T	Z	O	P	KO	W
12	PSH050912S	Self among others					1	K1ETK_U33 K1ETK_K09	10	54	2	1,4	T	Z	O	P	KO	W
13	ZMR042562W	Management bases	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	10	54	2	1,4	T	Z	O		KO	W
14	ZMR042563W	Marketing management	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	10	54	2	1,4	T	Z	O		KO	W
15	ZMR042564W	Management in the conditions of globalization and regionalization	1					K1ETK_W35 K1ETK_K01 K1ETK_K06	10	54	2	1,4	T	Z	O		KO	W
		Total	3				1		40	189	7	4,9						

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	JZL030003BKC	Foreign language B2 or C1		2				K1ETK_U31 K1ETK_K03 K1ETK_K04	20	27	1	0,7	T	Z	O	P	KO	W
2	JZL030004BKC	Foreign language B2 or C1		2				K1ETK_U31 K1ETK_K03 K1ETK_K04	20	27	1	0,7	T	Z	O	P	KO	W
3	JZL030005BKC	Foreign language B2 or C1		2				K1ETK_U31 K1ETK_K03 K1ETK_K04	20	27	1	0,7	T	Z	O	P	KO	W
4	JZL030007BKC	Foreign language B2 or C1		2				K1ETK_U31 K1ETK_K03 K1ETK_K04	20	54	2	1,4	T	Z	O	P	KO	W
		Total	0	8	0	0	0		80	135	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

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	8	0	0	1	120	324	12	8,4

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	ELR041364L	Computer networks			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	10	108	4	2,8	T	Z		P	PD	W
2	ELR041365L	Databases			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	10	108	4	2,8	T	Z		P	PD	W
3	ELR042570L	Object programming			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	10	108	4	2,8	T	Z		P	PD	W
4	ELR043275L	Programming in Delphi			1			K1ETK_U13 K1ETK_K05 K1ETK_K06	10	108	4	2,8	T	Z		P	PD	W
		Total	0	0	1	0	0		10	108	4	2,8						

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	10	108	4	2,8

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	ELR041369W	Renewable Energy Sources	2					K1ETK_EEN_W02 K1ETK_K04 K1ETK_K06	20	108	4	2,8	T	Z			K	W
2	ELR042164W	Microprocessor techniques in electrical power engineering	1					K1ETK_W26 K1ETK_EEN_W09	10	27	1	0,7	T	Z			K	W
3	ELR042164L	Microprocessor techniques in electrical power engineering			2			K1ETK_U23 K1ETK_EEN_U06 K1ETK_K05 K1ETK_K09	20	54	2	1,4	T	Z		P	K	W
4	ELR042165L	Programmable Logic Controllers			1			K1ETK_U23 K1ETK_EEN_U06 K1ETK_K05	10	27	1	0,7	T	Z		P	K	W
5	ELR042261W	Optoelectronics in control systems	2					K1ETK_EEN_W01 K1ETK_K05	20	81	3	2,1	T	Z			K	W
6	ELR042262W	Power system protection - fundamentals	2					K1ETK_EEN_W04 K1ETK_K09	20	54	2	1,4	T	Z			K	W
7	ELR042262L	Power system protection - fundamentals			1			K1ETK_EEN_U02 K1ETK_K09	10	27	1	0,7	T	Z		P	K	W
8	ELR042263W	Power system operation and control	2					K1ETK_EEN_W07 K1ETK_K09	20	54	2	1,4	T	Z			K	W
9	ELR042263L	Power system operation and control			1			K1ETK_EEN_U04 K1ETK_K09	10	27	1	0,7	T	Z		P	K	W
10	ELR042365W	Intelligent installations	1					K1ETK_EEN_W08	10	27	1	0,7	T	Z			K	W
11	ELR042365L	Intelligent installations			1			K1ETK_EEN_U05 K1ETK_K05 K1ETK_K09	10	27	1	0,7	T	Z		P	K	W
12	ELR042366W	Power substations	2					K1ETK_EEN_W10 K1ETK_K09	20	81	3	2,1	T	E			K	W
13	ELR042462W	Protection against electromagnetic fields	2					K1ETK_EEN_W05	20	54	2	1,4	T	Z			K	W
14	ELR042462L	Protection against electromagnetic fields			1			K1ETK_EEN_U03 K1ETK_K06	10	27	1	0,7	T	Z		P	K	W
15	ELR042463W	Electric power industries	2					K1ETK_EEN_W06 K1ETK_K06 K1ETK_K07	20	108	4	2,8	T	E			K	W
16	ELR043365W	Assessment of Power Quality	2					K1ETK_EEN_W03	20	54	2	1,4	T	Z			K	W
17	ELR043365L	Assessment of Power Quality			1			K1ETK_EEN_U01 K1ETK_K05	10	27	1	0,7	T	Z		P	K	W
		Total	18	0	8	0	0		260	864	32	22,4						

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	ELR041266W	Fundamentals of applied electrostatics	2					K1ETK_ETP_W01 K1ETK_K08	20	81	3	2,1	T	Z			K	W
2	ELR041267W	Energy-saving technologies in industry	2					K1ETK_ETP_W05 K1ETK_K06	20	54	2	1,4	T	Z			K	W
3	ELR041267L	Energy-saving technologies in industry			1			K1ETK_ETP_U03 K1ETK_K06	10	27	1	0,7	T	Z		P	K	W
4	ELR041268W	Sensors and Transducers	2					K1ETK_ETP_W08 K1ETK_K09	20	54	2	1,4	T	Z			K	W
5	ELR041268L	Sensors and Transducers			1			K1ETK_ETP_U05 K1ETK_K09	10	27	1	0,7	T	Z		P	K	W
6	ELR041370W	Design of electrical installations	1					K1ETK_W32 K1ETK_ETP_W04 K1ETK_K05 K1ETK_K09	10	27	1	0,7	T	Z			K	W
7	ELR041370P	Design of electrical installations				2		K1ETK_U05 K1ETK_U09 K1ETK_U11 K1ETK_U26 K1ETK_U33 K1ETK_ETP_U02 K1ETK_K05 K1ETK_K09	20	54	2	1,4	T	Z		P	K	W
8	ELR042463W	Electric power industries	2					K1ETK_ETP_W06 K1ETK_K06 K1ETK_K07	20	108	4	2,8	T	E			K	W
9	ELR042464W	Electrical receiver	2					K1ETK_ETP_W07	20	54	2	1,4	T	Z			K	W
10	ELR042464L	Electrical receiver			1			K1ETK_ETP_U04 K1ETK_K05 K1ETK_K09	10	27	1	0,7	T	Z		P	K	W
11	ELR043264W	Automation of Production Processes	1					K1ETK_ETP_W03 K1ETK_K05	10	27	1	0,7	T	Z			K	W
12	ELR043264L	Automation of Production Processes			2			K1ETK_ETP_U01 K1ETK_K05	20	54	2	1,4	T	Z		P	K	W
13	ELR043265W	Testing and diagnostic of electric machines	2					K1ETK_ETP_W09	20	54	2	1,4	T	Z			K	W
14	ELR043265L	Testing and diagnostic of electric machines			1			K1ETK_ETP_U06 K1ETK_K05	10	27	1	0,7	T	Z		P	K	W
15	ELR043266W	Controlled Electrical Drives - fundamentals	2					K1ETK_ETP_W10 K1ETK_K04	20	81	3	2,1	T	E			K	W
16	ELR043371W	Power Quality	2					K1ETK_ETP_W02 K1ETK_K05	20	108	4	2,8	T	Z			K	W
		Total	18	0	6	2	0		260	864	32	22,4						

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	ELR040095Q	Professional practice (6-week)				40		K1ETK_U32 K1ETK_K05	240	162	6	4,2	T	Z		P	K	W
		Total	0	0	0	40	0		240	162	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	ELR041099D ELR042099D ELR043099D	Engineering Thesis				9		K1ETK_EEN_U08 K1ETK_K08	90	405	15	10,5	T	Z		P	K	W
2	ELR042098S	Diploma seminar					2	K1ETK_EEN_U07 K1ETK_K09	20	81	3	2,1	T	Z		P	K	W
3	ELR041098S ELR043098S	Diploma seminar					2	K1ETK_ETP_U07 K1ETK_K09	20	81	3	2,1	T	Z		P	K	W
4	ELR041099D ELR042099D ELR043099D	Engineering Thesis				9		K1ETK_ETP_U08 K1ETK_K08	90	405	15	10,5	T	Z		P	K	W
		Total	0	0	0	9	2		110	486	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	610	1512	56	39,2

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**	**ELR040095Q**
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.		

4.4. Diploma dissertation module

Type of diploma dissertation:	inżynier	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**18**	**ELR041098S** **ELR042098S** **ELR043098S** **ELR041099D** **ELR042099D**
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)

168 ECTS

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

Number of ECTS points for obligatory subjects	56
Number of ECTS points for optional subjects	4
Total number of ECTS points	60

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

Number of ECTS points for obligatory subjects	66
Number of ECTS points for optional subjects	43
Total number of ECTS points	109

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

51 ECTS

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

72 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	ELR041261W	Fundamentals of Materials Engineering 1	I
2	MAT001464W	Algebra and analytic geometry A	I
3	INR042561W	Computer technology	I
4	MAT001472W	Mathematical Analysis 1.1 A	I
5	ELR043372W	Electrical Metrology 1	I
6	MAT001483W	Elements of Vector Analysis	II
7	ELR041361W	Circuits theory 1A	II
8	MAT001477W	Mathematical Analysis 2.1 A	II
9	FZP003071W	Physics B5	II
10	ELR041362W	Circuits theory 1B	III
11	ELR041161W	High voltage technology 1	IV
12	ELR043162W	Electrical Machines 1	IV
13	ELR041368W	Circuits theory 2	V
14	ELR042361W	Electrical Devices 1	V
15	ELR042362W ELR043375W	Power electronics 1	V
16	ELR043163W	Electrical Machines 2	V
17	ELR042161W	Fundamentals of control engineering 1	VI
18	ELR042567W	Electric Power Systems 1	VI
19	ELR043261W	Electrical Drive 1	VI
20	ELR040095Q	Professional practice (6-week)	VI
21	ELR043263L	Electrical Drive 2	VII

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