

PLAN OF STUDIES

FACULTY:	Electrical Engineering
MAIN FIELD OF STUDY:	Electrical Engineering
EDUCATION LEVEL:	2nd level, 2nd level studies
FORM OF STUDIES:	full-time
PROFILE:	general academic
SPECIALIZATION:	Renewable Energy Sources
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: 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			university-wide	practical	kind	type
1	ELR051310W	Selected problems of circuit theory	2					K2ETK_W1	30	90	3	2,1	T	E			K	OB
2	ELR051310C	Selected problems of circuit theory		1				K2ETK_U1 K2ETK_K1	15	30	1	0,7	T	Z		P	K	OB
3	ELR051311W ELR052111W ELR052511W	Numerical methods in engineering	1					K2ETK_W2 K2ETK_K2	15	30	1	0,7	T	Z			PD	OB
4	ELR051311P ELR052111P ELR052511P	Numerical methods in engineering					1	K2ETK_U2 K2ETK_K2	15	30	1	0,7	T	Z		P	PD	OB
5	ELR051314W	Industrial ecology – selected problems	1					S2OZE_W3 K2ETK_K1 K2ETK_K3	15	30	1	0,7	T	Z			S	OB
6	ELR052211W	Short-circuits in power systems	2					K2ETK_W3 K2ETK_K3	30	60	2	1,4	T	Z			K	OB
7	ELR052315W	Legal regulations and investments in power system with distributed energy sources	1					S2OZE_W12 K2ETK_K6	15	30	1	0,7	T	Z			S	OB
8	ELR052315S	Legal regulations and investments in power system with distributed energy sources					1	S2OZE_U8 K2ETK_K6	15	30	1	0,7	T	Z		P	S	OB
9	ELR052519W	Centralized and decentralized electricity generation technologies	2					S2OZE_W1 K2ETK_K1	30	90	3	2,1	T	E			S	OB
10	ELR052519L	Centralized and decentralized electricity generation technologies			1			S2OZE_U1 K2ETK_K1	15	30	1	0,7	T	Z		P	S	OB
11	ELR053209W	Electromechanical drive systems	2					K2ETK_W4	30	90	3	2,1	T	E			K	OB
12	ELR053209L	Electromechanical drive systems			1			K2ETK_U3 K2ETK_K1	15	30	1	0,7	T	Z		P	K	OB
13	ELR053259W	Power electronics converters in energetics	2					S2OZE_W10 K2ETK_K7	30	60	2	1,4	T	Z			S	OB
14	ELR053259L	Power electronics converters in energetics			1			S2OZE_U2 K2ETK_K7	15	60	2	1,4	T	Z		P	S	OB
15	ELR053307W	Electrical Measurement Nonelectrical Values	1					K2ETK_W5 K2ETK_K2	15	60	2	1,4	T	Z			PD	OB
16	ELR053307L	Electrical Measurement Nonelectrical Values			1			K2ETK_U4 K2ETK_K2	15	30	1	0,7	T	Z		P	PD	OB
Total			14	1	4	1	1		315	780	26	18,2						

Optional courses					minimum	60	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			university wide	practical	kind	type
Optional courses block: Foreign Language								ECTS		2		hours		3				
1	JZL100710BKC	Foreign language A1 or A2		3				K2ETK_U6 K2ETK_K1	45	60	2	1,4	T	Z	O	P	KO	W
Optional courses block: Management								ECTS		2		hours		1				
1	ZMR052513W	Management of a Company	1					K2ETK_W6 K2ETK_K3 K2ETK_K6	15	50	2	1,4	T	Z	O		KO	W
2	ZMR052521W	Management in the power industry	1					K2ETK_W6 K2ETK_K3 K2ETK_K6	15	50	2	1,4	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	hours	hours	points	points
15	4	4	1	1	375	890	30	21

Semester 2

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			university wide	practical	kind	type
1	ELR051315W	Photovoltaic Cells	2					S2OZE_W6 K2ETK_K6 K2ETK_K7	30	90	3	2,1	T	Z			S	OB
2	ELR051315L	Photovoltaic Cells			1			S2OZE_U4 K2ETK_K6 K2ETK_K7	15	30	1	0,7	T	Z		P	S	OB
3	ELR051316W	Measuring systems in the electrical engineering	1					S2OZE_W8	15	30	1	0,7	T	Z			S	OB
4	ELR051316L	Measuring systems in the electrical engineering			1			S2OZE_U6 K2ETK_K6	15	30	1	0,7	T	Z		P	S	OB
5	ELR052117L ELR053219L	PLC application in renewable electrical power engineering systems			2			S2OZE_U5 K2ETK_K2 K2ETK_K7	30	60	2	1,4	T	Z		P	S	OB
6	ELR052118W	Modelling of DES systems	1					S2OZE_W6 S2OZE_W11	15	30	1	0,7	T	Z			S	OB
7	ELR052118L	Modelling of DES systems			1			S2OZE_U4 S2OZE_U7 K2ETK_K6 K2ETK_K7	15	30	1	0,7	T	Z		P	S	OB
8	ELR052216W	Integration of dispersed energy sources in electric power system	2					S2OZE_W4 K2ETK_K6	30	60	2	1,4	T	Z			S	OB
9	ELR052217W	Automatic control and relay protection of dispersed energy sources	1					S2OZE_W7	15	90	3	2,1	T	E			S	OB
10	ELR052217L	Automatic control and relay protection of dispersed energy sources			2			S2OZE_U3 S2OZE_U7 K2ETK_K7	30	60	2	1,4	T	Z		P	S	OB
11	ELR052314W	Energy Storage Systems	2					S2OZE_W9 K2ETK_K6	30	90	3	2,1	T	E			S	OB
12	ELR052520W	Market Mechanisms in Power Systems with Distributed Energy	2					S2OZE_W13	30	60	2	1,4	T	Z			S	OB
13	ELR052520S	Market Mechanisms in Power Systems with Distributed Energy					1	S2OZE_U8 K2ETK_K6	15	30	1	0,7	T	Z		P	S	OB
14	ELR053107W	Electromechanical Systems in Renewable Energy	2					S2OZE_W5	30	60	2	1,4	T	Z			S	OB
15	ELR053107L	Electromechanical Systems in Renewable Energy			1			S2OZE_U3 K2ETK_K7	15	30	1	0,7	T	Z		P	S	OB
16	ELR053220W	Control of power electronics converters	2					S2OZE_W2 K2ETK_K6	30	60	2	1,4	T	Z			S	OB
Total			15		8		1		360	840	28	19,6						

Optional courses					minimum	30	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			university wide	practical	kind	type
Optional courses block: Foreign Language								ECTS		1		hours		1				
1	JZL100709BKC	Foreign language B2+ or C1+		1				K2ETK_U5 K2ETK_K1	15	30	1	0,7	T	Z	O	P	KO	W
Optional courses block: Law								ECTS		1		hours		1				
1	PRR051216W	Standardization and engineering law	1					K2ETK_W7 K2ETK_K3 K2ETK_K5	15	25	1	0,7	T	Z	O		KO	W
2	PRR051217W	Engineering law	1					K2ETK_W7 K2ETK_K3 K2ETK_K5	15	25	1	0,7	T	Z	O		KO	W
3	PRR051218W	Technical standardization	1					K2ETK_W7 K2ETK_K3 K2ETK_K5	15	25	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				
16	1	8	0	1	390	895	30	21

Semester 3

Optional courses			minimum 315					hours in semester, 30				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			university wide	practical	kind	type
1	ELR051158S	Diploma seminar					2	S2OZE_U11 K2ETK_K6	30	90	3	2,1	T	Z		P	S	W
2	ELR051159DP ELR052159DP ELR053159DP	Master's thesis					12	S2OZE_U12 K2ETK_K4 K2ETK_K6	180	540	18	12,6	T	Z		P	S	W
Optional courses block: Social Sciences and Ethics								ECTS		2		hours		1				
1	FLH051621S	Ethics in bussiness					1	K2ETK_U7 K2ETK_K6	15	50	2	1,4	T	Z	O	P	KO	W
2	PKH050421S	Social communication					1	K2ETK_U7 K2ETK_K6	15	50	2	1,4	T	Z	O	P	KO	W
3	PKH050521S	The art of public speaking					1	K2ETK_U7 K2ETK_K6	15	50	2	1,4	T	Z	O	P	KO	W
Optional courses block: A								ECTS		2		hours		2				
1	ELR051317W	Optimisation techniques	1					S2OZE_W14 K2ETK_K6	15	30	1	0,7	T	Z			S	W
2	ELR051317L	Optimisation techniques			1			S2OZE_U9 K2ETK_K6	15	30	1	0,7	T	Z		P	S	W
3	ELR051318W	Digital Signal Processing Algorithm for power quality	1					S2OZE_W14	15	30	1	0,7	T	Z			S	W
4	ELR051318L	Digital Signal Processing Algorithm for power quality			1			S2OZE_U9 K2ETK_K7	15	30	1	0,7	T	Z		P	S	W
5	ELR051319W	Introduction to system signal processor programming	1					S2OZE_W14 K2ETK_K6	15	30	1	0,7	T	Z			S	W
6	ELR051319L	Introduction to system signal processor programming			1			S2OZE_U9 K2ETK_K6	15	30	1	0,7	T	Z		P	S	W

Optional courses block: B										ECTS		3	hours						2
1	ELR053108W	Electrodynamics of electrical machines and apparatus for renewable energy conversion	1						S2OZE_W15	15	60	2	1,4	T	E			S	W
2	ELR053108L	Electrodynamics of electrical machines and apparatus for renewable energy conversion			1				S2OZE_U10 K2ETK_K7	15	30	1	0,7	T	Z		P	S	W
3	ELR053221W	Power electronics in industry automation	1						S2OZE_W15 K2ETK_K6	15	60	2	1,4	T	E			S	W
4	ELR053221L	Power electronics in industry automation			1				S2OZE_U10 K2ETK_K6	15	30	1	0,7	T	Z		P	S	W
5	ELR053222W	Theory of power converters	1						S2OZE_W15 K2ETK_K6	15	60	2	1,4	T	E			S	W
6	ELR053222P	Theory of power converters				1			S2OZE_U10 K2ETK_K6	15	30	1	0,7	T	Z		P	S	W
Optional courses block: C										ECTS		2	hours						2
1	ELR051320W	Modeling of RES systems	2						S2OZE_W16 K2ETK_K6	30	60	2	1,4	T	Z			S	W
2	ELR053109W	Modelling of electrical machines	2						S2OZE_W16 K2ETK_K1	30	60	2	1,4	T	Z			S	W
3	ELR053223W	Wind Power Station Modelling	2						S2OZE_W16 K2ETK_K6	30	60	2	1,4	T	Z			S	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				
4	0	2	12	3	315	890	30	21

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
ELR051310W	Selected problems of circuit theory	1
ELR052519W	Centralized and decentralized electricity generation	1
ELR053209W	Electromechanical drive systems	1
ELR052217W	Automatic control and relay protection of dispersed energy	2
ELR052314W	Energy Storage Systems	2
one exam from optional courses block B		3

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

Semester	Allowable deficit of ECTS points after semester
1	5
2	5

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

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Dean's signature