

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:	Control in Electrical Power Engineering
LANGUAGE OF STUDY:	english

Electrical Engineering Faculty Council Resolution of 28.09.2015
In effect since 01.10.2015

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					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	ELR031330W	Numerical and Optimization Methods	1					K2ETK_W02	15	60	2	1,4	T	Z			PD	OB
2	ELR031330L	Numerical and Optimization Methods			1			K2ETK_U02 S2CPE_K01	15	30	1	0,7	T	Z		P	PD	OB
3	ELR031331W	Power Quality Assessment	2					S2CPE_W13 K2ETK_K01 K2ETK_K02	30	60	2	1,4	T	Z			S	OB
4	ELR031331L	Power Quality Assessment			1			S2CPE_U12 S2CPE_U14 K2ETK_K01 K2ETK_K02	15	30	1	0,7	T	Z		P	S	OB
5	ELR032131W	Power System Faults	2					K2ETK_W03 K2ETK_K01	30	120	4	2,8	T	E			K	OB
6	ELR032132W	Digital Control Techniques	2					S2CPE_W01 K2ETK_K02 S2CPE_K01 S2CPE_K02	30	90	3	2,1	T	Z			S	OB
7	ELR032132L	Digital Control Techniques			1			S2CPE_U01 K2ETK_K02 S2CPE_K01 S2CPE_K02	15	30	1	0,7	T	Z		P	S	OB
8	ELR032139P	Fault Calculations				2		K2ETK_U02 S2CPE_U15 K2ETK_K02	30	60	2	1,4	T	Z		P	S	OB
9	ELR033225W	Dynamics and Control of AC and DC Drives	2					K2ETK_W04	30	120	4	2,8	T	E			K	OB
10	ELR033225L	Dynamics and Control of AC and DC Drives			1			K2ETK_U03 K2ETK_K02 S2CPE_K01	15	30	1	0,7	T	Z		P	K	OB
11	ELR033225P	Dynamics and Control of AC and DC Drives				1		K2ETK_U03 K2ETK_K02 S2CPE_K01	15	30	1	0,7	T	Z		P	K	OB
12	ESN001501W	Advanced Technology in Electrical Power Generation	2					S2CPE_W05 S2CPE_W14	30	90	3	2,1	T	Z			S	OB
13	ESN001501C	Advanced Technology in Electrical Power Generation		1				K2ETK_K03 S2CPE_U06 S2CPE_U16	15	30	1	0,7	T	Z		P	S	OB
Total			11	1	4	3			285	780	26	18,2						

Optional courses

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational effect symbol	Number of hours				Form of course	Way of crediting	Number of ECTS points							
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes			university-wide	practical	kind	type				
																			minimum 75			
Optional courses block: Foreign Language															ECTS 3				hours 4			
1	JZL100709BKC	Foreign language B2+ or C1+		1				K2ETK_U05 K2ETK_K01	15	30	1	0,7	T	Z	O	P	KO	W				
2	JZL100710BKC	Foreign language A1 or A2		3				K2ETK_U06 K2ETK_K01	45	60	2	1,4	T	Z	O	P	KO	W				
Optional courses block: Sports															ECTS 1				hours 1			
1	WFW010000BKC	Sporting classes		1				K2ETK_K06	15	15	1	0,7	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				
11	6	4	3	0	360	885	30	21

Semester 2

Obligatory courses

number of ECTS points: 24

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	ELR031332W	Circuits and Systems	2					K2ETK_W01	30	60	2	1,4	T	E			K	OB
2	ELR031332C	Circuits and Systems		1				K2ETK_U01 K2ETK_K01	15	30	1	0,7	T	Z		P	K	OB
3	ELR032133W	Simulation and Analysis of Power System Transients	1					S2CPE_W01 S2CPE_W05	15	30	1	0,7	T	Z			S	OB
4	ELR032133L	Simulation and Analysis of Power System Transients			2			S2CPE_U02 S2CPE_U15 S2CPE_K01 S2CPE_K02	30	60	2	1,4	T	Z		P	S	OB
5	ELR032134W	Digital Signal Processing for Protection and Control	2					S2CPE_W02	30	60	2	1,4	T	E			S	OB
6	ELR032134P	Digital Signal Processing for Protection and Control				2		S2CPE_U03 K2ETK_K02	30	60	2	1,4	T	Z		P	S	OB
7	ELR032231W	Power System Protection	2					S2CPE_W03 S2CPE_K01	30	90	3	2,1	T	E			S	OB
8	ELR032231L	Power System Protection			2			S2CPE_U04 S2CPE_K01	30	60	2	1,4	T	Z		P	S	OB
9	ELR032232W	Fiber Optics Communications and Sensors	2					S2CPE_W04 S2CPE_K01	30	60	2	1,4	T	Z			S	OB
10	ELR032232L	Fiber Optics Communications and Sensors			1			S2CPE_U05 S2CPE_K01	15	30	1	0,7	T	Z		P	S	OB
11	ELR032331W	Renewable Energy Sources	2					S2CPE_W05 S2CPE_K01	30	60	2	1,4	T	Z			S	OB
12	ELR032331S	Renewable Energy Sources					1	S2CPE_U06 S2CPE_K01	15	30	1	0,7	T	Z		P	S	OB
13	ELR032531W	Electric Power System Operation and Control	2					S2CPE_W06	30	60	2	1,4	T	Z			S	OB
14	ELR032531S	Electric Power System Operation and Control					1	S2CPE_K02 S2CPE_U07 S2CPE_U10	15	30	1	0,7	T	Z		P	S	OB
Total			13	1	5	2	2		345	720	24	16,8						

Optional courses

minimum 175

hours in semester, 6

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	ELR035105Q	Diploma placement 4 weeks				40		S2CPE_U19 S2CPE_K01	160	120	4	2,8	T	Z		P	S	W
Optional courses block: Management									ECTS		2		hours		1			
1	ZMR032538W	Market Mechanisms in Power Systems with Distributed Energy	1					K2ETK_W06 K2ETK_K03 K2ETK_K07	15	60	2	1,4	T	Z	O		KO	W
2	ZMZ001499W	Fundamentals of Management	1					K2ETK_W06 K2ETK_K03 K2ETK_K07	15	60	2	1,4	T	Z	O		KO	W

Altogether in semester

Diploma placement

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	1	5	2	2	360	780	26	18,2
0	0	0	40	0	160	120	4	2,8

Semester 3

Obligatory courses

number of ECTS points: 21

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	ELR031120W	Advanced High Voltage Technology	2					S2CPE_W07 S2CPE_K02	30	90	3	2,1	T	E			S	OB
2	ELR031120L	Advanced High Voltage Technology			2			S2CPE_K02 S2CPE_U08 S2CPE_U09	30	60	2	1,4	T	Z		P	S	OB
3	ELR032135W	Artificial Intelligence Techniques	2					S2CPE_W08	30	60	2	1,4	T	Z			S	OB
4	ELR032135P	Artificial Intelligence Techniques				1		K2ETK_K02 K2ETK_U02 S2CPE_K01	15	30	1	0,7	T	Z		P	S	OB
5	ELR032233W	Power System Automation and Security	2					S2CPE_W03 S2CPE_W09 S2CPE_K01	30	90	3	2,1	T	E			S	OB
6	ELR032233S	Power System Automation and Security				1		S2CPE_U04 S2CPE_K01	15	30	1	0,7	T	Z		P	S	OB
7	ELR032532W	Electrical Power Systems Management	1					S2CPE_W10 S2CPE_K02	15	30	1	0,7	T	Z			S	OB
8	ELR032532S	Electrical Power Systems Management				1		S2CPE_U07 S2CPE_U11 S2CPE_K02	15	30	1	0,7	T	Z		P	S	OB
9	ELR033311W	Electromagnetic Compatibility	2					S2CPE_W11 S2CPE_K02	30	60	2	1,4	T	Z			S	OB
10	ELR033311L	Electromagnetic Compatibility			1			S2CPE_K02 S2CPE_U12 S2CPE_U13	15	30	1	0,7	T	Z		P	S	OB
11	ELR033312W	Advanced Measurement in Electrical Power Engineering	2					K2ETK_W05 S2CPE_W12	30	60	2	1,4	T	Z			PD	OB
12	ELR033312L	Advanced Measurement in Electrical Power Engineering			2			K2ETK_U04 S2CPE_K02	30	60	2	1,4	T	Z		P	PD	OB
Total			11		5	1	2		285	630	21	14,7						

Optional courses

minimum 135

hours in semester,

9

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	ELR035117P ELR035127P ELR035137P	Diploma Project				8		S2CPE_U20 K2ETK_K07	120	240	8	5,6	T	Z		P	S	W
Optional courses block: Law										ECTS	1	hours	1					
1	PRR031231W	Intellectual property rights in the world	1					K2ETK_W07 K2ETK_K03 K2ETK_K05	15	30	1	0,7	T	Z	O		KO	W
2	PRR031232W	Inventions and patents	1					K2ETK_W07 K2ETK_K03 K2ETK_K05	15	30	1	0,7	T	Z	O		KO	W
3	PRR031233W	Industrial property and copyright for engineers	1					K2ETK_W07 K2ETK_K03 K2ETK_K05	15	30	1	0,7	T	Z	O		KO	W
4	PRZ001007W	Protection of Intellectual Property	1					K2ETK_W07 K2ETK_K03 K2ETK_K05	15	30	1	0,7	T	Z	O		KO	W
5	PRZ001008W	International Law	1					K2ETK_W07 K2ETK_K03 K2ETK_K05	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	0	5	9	2	420	900	30	21

Semester 4

Optional courses

No.	Course code	Name of course	Weekly number of hours					Field-of-study educational effect symbol	minimum 300				hours in semester, 30		ECTS points			
			lec	cl	lab	pr	sem		Number of hours		Number of ECTS points		Form of course	Way of crediting	Course			
									ZZU	CNPS	total	BK classes			university-wide	practical	kind	type
1	ELR035108S	Diploma seminar					2	S2CPE_U21 S2CPE_K01	30	90	3	2,1	T	Z		P	S	W
2	ELR035119DP ELR035129DP ELR035139DP	Master's thesis					12	S2CPE_U22 K2ETK_K04 S2CPE_K01	180	540	18	12,6	T	Z		P	S	W
Optional courses block: Social Sciences and Ethics									ECTS		2		hours		1			
1	FLH051721S	Ethics in bussiness					1	K2ETK_U07 K2ETK_K07	15	60	2	1,4	T	Z	O	P	KO	W
2	PKH053721S	The art of public speaking					1	K2ETK_U07 K2ETK_K07	15	60	2	1,4	T	Z	O	P	KO	W
3	PKH053821S	Social communication					1	K2ETK_U07 K2ETK_K07	15	60	2	1,4	T	Z	O	P	KO	W
Optional courses block: A									ECTS		4		hours		3			
1	ELR031230W	Visual Engineering Environments and Graphical Languages	1					S2CPE_W15	15	30	1	0,7	T	E			S	W
2	ELR031230L	Visual Engineering Environments and Graphical Languages			2			K2ETK_K02 S2CPE_U17	30	90	3	2,1	T	Z		P	S	W
3	ELR031334W	Signal and Systems	2					K2ETK_W01 S2CPE_W15	30	90	3	2,1	T	E			S	W
4	ELR031334C	Signal and Systems		1				K2ETK_U01 S2CPE_U17 K2ETK_K01	15	30	1	0,7	T	Z		P	S	W
5	ELR031335W	Advanced Signal Processing Methods	2					S2CPE_W15	30	90	3	2,1	T	E			S	W
6	ELR031335C	Advanced Signal Processing Methods		1				S2CPE_U17 S2CPE_K01	15	30	1	0,7	T	Z		P	S	W
7	ELR032234W	PLC and Wireless Communications for Monitoring and Metering	2					S2CPE_K01 S2CPE_W15	30	90	3	2,1	T	E			S	W
8	ELR032234S	PLC and Wireless Communications for Monitoring and Metering					1	S2CPE_K01 S2CPE_U17	15	30	1	0,7	T	Z		P	S	W
9	ELR032335W	Advanced Substations and Electrical Equipment	2					S2CPE_W15	30	90	3	2,1	T	E			S	W
10	ELR032335P	Advanced Substations and Electrical Equipment					1	S2CPE_K01 S2CPE_U17	15	30	1	0,7	T	Z		P	S	W
11	ELR032534W	Power System Modelling	2					S2CPE_W15	30	90	3	2,1	T	E			S	W
12	ELR032534P	Power System Modelling					1	S2CPE_U17 S2CPE_K01	15	30	1	0,7	T	Z		P	S	W
13	ELR032535W	Computer Control of Power System	2					S2CPE_W15	30	90	3	2,1	T	E			S	W
14	ELR032535S	Computer Control of Power System					1	S2CPE_K01 S2CPE_U17	15	30	1	0,7	T	Z		P	S	W
Optional courses block: B									ECTS		3		hours		2			
1	ELR032136W	Design of logic circuits	1					S2CPE_W16	15	60	2	1,4	T	Z			S	W
2	ELR032136L	Design of logic circuits			1			K2ETK_K01 K2ETK_K02 S2CPE_K02 S2CPE_U18	15	30	1	0,7	T	Z		P	S	W
3	ELR033226W	Fuzzy Logic Control	1					S2CPE_W16	15	60	2	1,4	T	Z			S	W
4	ELR033226L	Fuzzy Logic Control			1			S2CPE_U18 S2CPE_K01	15	30	1	0,7	T	Z		P	S	W
5	ELR033227W	Control of Power Electronic Converters	1					S2CPE_W16 S2CPE_K01	15	60	2	1,4	T	Z			S	W
6	ELR033227L	Control of Power Electronic Converters			1			S2CPE_U18 S2CPE_K01	15	30	1	0,7	T	Z		P	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				
3	1	1	12	3	300	900	30	21

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
ELR032131W	Power System Faults	1
ELR033225W	Dynamics and Control of AC and DC Drives	1
ELR031332W	Circuits and Systems	2
ELR032134W	Digital Signal Processing for Protection and Control	2
ELR032231W	Power System Protection	2
ELR031120W	Advanced High Voltage Technology	3
ELR032233W	Power System Automation and Security	3
one exam from optional courses block A		4

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

Semester	Allowable deficit of ECTS points after semester
1	4
2	4
3	3
4	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

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Dean's signature