

PLAN OF STUDY

FACULTY: MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: POWER ENGINEERING

EDUCATION LEVEL: 2nd level, Master of Science

FORM OF STUDIES: full-time

PROFILE: general academic

SPECIALIZATION: **RENEWABLE SOURCES OF ENERGY**

LANGUAGE OF STUDY: English

Faculty Council Resolution of 20.09.2017
In effect since 01.10.2017

Plan of studies structure in point layout

30		Master	
29		individual	
28		student	
27		project	
26			
25			
24			Master
23			thesis
22			
21			
20			
19			
18			
17			
16			
15			
14	Quantum		
13	physics		
12			
11			
10	Numerical		Master
9	methods		seminar
8			
7			
6			
5	Probability		Marketing and
4	theory		management
3		Management course	
2		Foreign	Humanities
1	Foreign language	language	course
	sem. 1	sem. 2	sem. 3

basic and obligatory courses
general and obligatory courses
general and optional courses
obligatory main-field-of-study courses
optional main-field-of-study courses
optional/specialization courses

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

Semester 1

Obligatory courses number of ECTS points 13

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of- study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ESN0199	Quantum Physics	2					K2ENG_W03	30	90	3	1.5	T	E			PD	Ob
2	ESN0911	Probability Theory	2					K2ENG_W01	30	90	3	1.5	T	E			PD	Ob
3	ESN0911	Probability Theory		1				K2ENG_U05	15	60	2	1.5	T	Z		P	PD	Ob
4	ESN0503	Numerical Methods	2					K2ENG_W02	30	90	3	1.5	T	E			PD	Ob
5	ESN0503	Numerical Methods			2			K2ENG_U06	30	60	2	1.5	T	Z		P	PD	Ob
Total			6	1	2				135	390	13	7.5						

Optional courses (minimum 255 hours in semester) number of ECTS points 17

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of- study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university- wide ⁴	practical ⁵	kind ⁶	type ⁷
1	JZL100709	Foreign Language (continuation), level B+		1				K2ENG_U04	15	30	1	0.75	T	Z	O	P	KO	W
2	ESN0192	Physics of the Renewable Energy	2					S2RSE_W01	30	60	2	1	T	Z			S	W
3	ESN0192	Physics of the Renewable Energy				2		S2RSE_U01	30	60	2	1.5	T	Z		P	S	W
4	ESN0192	Physics of the Renewable Energy					1	S2RSE_U02	15	30	1	0.75	T	Z		P	S	W
5	ESN0571	Fuel Cell and Technology of Hydrogen Production	2					S2RSE_W02	30	60	2	1	T	Z			S	W
6	ESN0571	Fuel Cell and Technology of Hydrogen Production			1			S2RSE_U03	15	30	1	0.75	T	Z		P	S	W
7	ESN0182	Water Power Engineering	2					S2RSE_W03	30	60	2	1	T	Z			S	W
8	ESN0182	Water Power Engineering				2		S2RSE_U04	30	60	2	1.5	T	Z		P	S	W

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷
9	ESN1124	Power Production Systems and Technology from Biomass	2					S2RSE_W08	30	60	2	1	T	Z			S	W
10	ESN1124	Power Production Systems and Technology from Biomass		1				S2RSE_U10	15	30	1	0.75	T	Z		P	S	W
11	ESN1124	Power Production Systems and Technology from Biomass					1	S2RSE_U11	15	30	1	0.75	T	Z		P	S	W
Total			8	2	1	4	2		255	510	17	10.75						

Altogether in semester 1

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
14	3	3	4	2	390	900	30	18.25

Semester 2

Obligatory courses number of ECTS points 8

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ESN0554	Mathematical Modelling of Energy Generation Installations	2					K2ENG_W05	30	90	3	1,5	T	E			K	Ob
2	ESN0554	Mathematical Modelling of Energy Generation Installations			4			K2ENG_U07	60	60	2	1,5	T	Z		P	K	Ob
3	ESN1116	New Generation Energy Technologies	2					K2ENG_W04	30	90	3	1,5	T	E			K	Ob
Total			4		4				120	240	8	4.5						

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Optional courses (minimum 330 hours in semester) number of ECTS points 22

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	JZL100710BK	Foreign Language (second), any level		3				K2ENG_U09	45	60	2	1.5	T	Z	O	P	KO	W
2	ZSN100500BK	Management Course	1					K2ENG_W06 K2ENG_K02 K2ENG_K05	15	30	1	0.5	T	Z			KO	W
3	ESN0362	Refrigeration Heating Systems	1					S2RSE_W05	15	30	1	0.5	T	Z			S	W
4	ESN0362	Refrigeration Heating Systems			1			S2RSE_U07 K2ENG_K04	15	30	1	0.75	T	Z		P	S	W
5	ESN0141	Wind Power Plants	1					S2RSE_U06	15	30	1	0.5	T	Z			S	W
6	ESN0141	Wind Power Plants				2		S2RSE_U08	30	60	2	1.5	T	Z		P	S	W
7	ESN0151	Geothermal Power Engineering	1					S2RSE_W07	15	30	1	0.5	T	Z			S	W
8	ESN0151	Geothermal Power Engineering		1				S2RSE_U10	15	30	1	0.75	T	Z		P	S	W
9	ESN1196	Thermonuclear Power Generation	2					S2RSE_W04	30	60	2	1	T	Z			S	W
10	ESN1196	Thermonuclear Power Generation		1				S2RSE_U06	15	30	1	0.75	T	Z		P	S	W
11	ESN1196	Thermonuclear Power Generation				1		S2RSE_U07	15	60	2	1.5	T	Z		P	S	W
12	ESN0204	Photothermal Energy Conversion System	1					S2RSE_W09	15	30	1	0.5	T	Z			S	W
13	ESN0204	Photothermal Energy Conversion System				2		S2RSE_U12	30	60	2	1.5	T	Z		P	S	W
14	ESN1365	Master Individual Student Project				4		K2ENG_U01 K2ENG_U03 K2ENG_K01 K2ENG_K04	60	120	4	2	T	Z		P	K	W
Total			7	5	1	8	1		330	660	22	13.75						

Altogether in semester 2

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
11	5	5	8	1	450	900	30	18,25

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Semester 3

Obligatory courses number of ECTS points 8

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ESN1063	Energy Systems	2					K2ENG_W08	30	60	2	1	T	Z			K	Ob
2	ESN1063	Energy Systems		1				K2ENG_U08	15	30	1	0.75	T	Z		P	K	Ob
3	ZMZ135W	Marketing and Management	2					K2ENG_W07	30	90	3	1.5	T	Z			KO	Ob
4	ESN1381	Diploma Seminar					2	K2ENG_U01 K2ENG_U02 K2ENG_K01 K2ENG_K03 K2ENG_K04 K2ENG_K05	30	60	2	1.5	T	Z		P	K	Ob
Total			4	1			2		105	240	8	4.75						

Optional courses number of ECTS points 22

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	HSN10050BK	Humanities Course	1					K2ENG_W07 K2ENG_K02 K2ENG_K06	15	60	2	1	T	Z	O		KO	W
2	ESN1431	Master Thesis						K2ENG_U01 K2ENG_U02 K2ENG_U03 K2ENG_K01 K2ENG_K04 K2ENG_K05		600	20	4	T	Z		P	K	W
Total			1						15	660	22	5						

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Altogether in semester 3

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
5	1			2	120	900	30	9,75

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
ESN0911 ESN0503 ESN0199	1. Probability Theory 2. Numerical Methods 3. Quantum Physics	1
ESN0554 ESN1116	1. Mathematical Modelling of Energy Generation Installations 2. New Generation Energy Technologies	2

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

Semester	Allowable deficit of ECTS points after semester
1	10
2	0