FACULTY OF MECHANICAL AND POWER ENGINEERING

main field of study: **MECHANICAL ENGINEERING AND MACHINE BUILDING**

full-time studies 2nd level

PLANS of STUDIES

Edited adjustment_April 2014

PLAN OF STUDIES

FACULTY: FACULTY OF MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: Mechanical Engineering and Machine Building

EDUCATION LEVEL: 2nd level, magister inżynier

FORM OF STUDIES: full-time
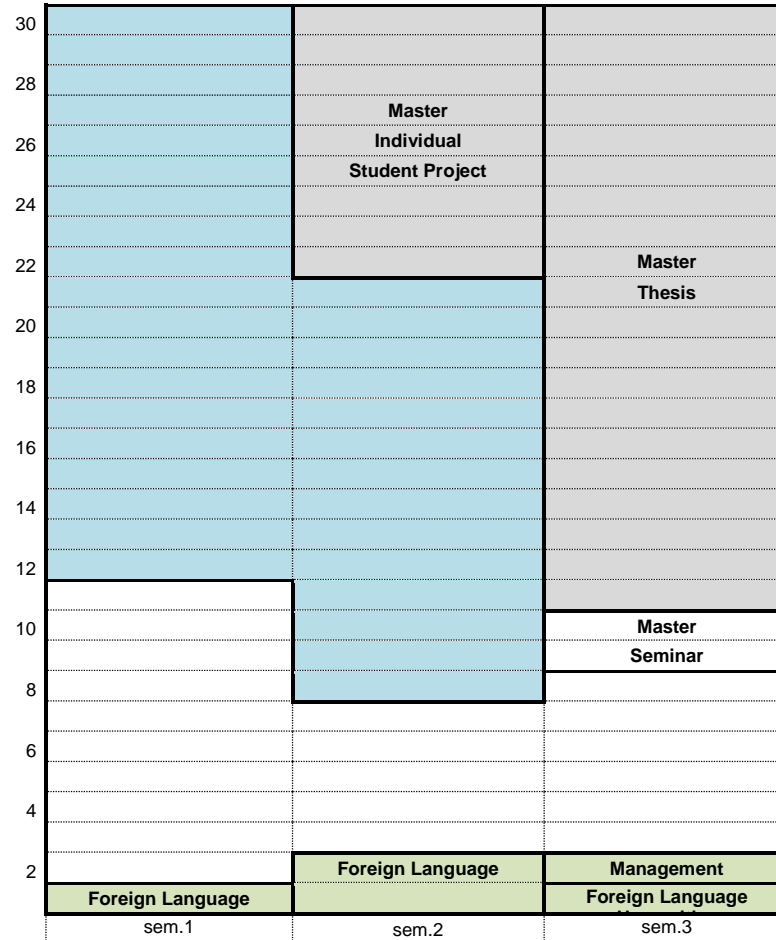
PROFILE: general academic

SPECIALIZATION: **PROCESS SYSTEMS ENGINEERING**

LANGUAGE OF STUDY: Polish

Faculty Council Resolution of 26.09.2012

In effect since 01.10.2012

Plan of studies structure in point layout

30		
28	Master	
26	Individual	
24	Student Project	
22		Master
20		Thesis
18		
16		
14		
12		
10		Master
8		Seminar
6		
4		
2	Foreign Language	Management
	Foreign Language	Foreign Language
sem.1	sem.2	sem.3

Legend

General and optional courses
Obligatory courses
Optional courses
Specialization/optional courses

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

Semester 1

Obligatory courses number of ECTS points 10

| 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	MSN0462	Mechanics analytical	2					K2MBM_W03	30	60	2	1	T	Z			K	Ob
2	MSN1363	Modern engineering materials	1					K2MBM_W02	15	30	1	0,5	T	Z			K	Ob
3	MSN1363	Modern engineering materials			1			K2MBM_U02	15	30	1	0,75	T	Z		P	K	Ob
4	MSN1363	Modern engineering materials					1	K2MBM_U06	15	30	1	0,75	T	Z		P	K	Ob
5	MSN0530	Mechatronics and Control Systems	2					K2MBM_W01	30	90	3	1,5	T	E			K	Ob
6	MSN0530	Mechatronics and Control Systems			2			K2MBM_U01	30	60	2	1,5	T	Z		P	K	Ob
		Total	5		3		1		135	300	10	6						

Optional courses (minimum 300 hours in semester, 20 ECTS points)

| 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	JZL100655BK	Foreign language (continuation), level B2+		1				K2MBM_U08	15	30	1	0,75	T	Z	O	P	KO	W
2	MSN0271	Computer control of engineering projects	1					S2IAP_W03	15	30	1	0,5		Z			S	W
3	MSN0271	Computer control of engineering projects			2			S2IAP_U03	30	60	2	1,5		Z		P	S	W
4	MSN0280	Construction and Utilization of Process Apparatus	1					S2IAP_W02	15	30	1	0,5		Z			S	W
5	MSN0280	Construction and Utilization of Process Apparatus				2		S2IAP_U02	30	60	2	1,5		Z		P	S	W
6	MSN0351	Crystallization and Crystallizers	2					S2IAP_W06	30	60	2	1		Z			S	W
7	MSN0351	Crystallization and Crystallizers			1			S2IAP_U08	15	30	1	0,75		Z		P	S	W
8	MSN0600	Mixing and Mixers				1		S2IAP_U05	15	30	1	0,75		Z		P	S	W
9	MSN0600	Mixing and Mixers					1	S2IAP_U06	15	30	1	0,75		Z		P	S	W
10	MSN0651	Dynamic Operations in Process Engineering	2					S2IAP_W01	30	60	2	1		E			S	W
11	MSN0651	Dynamic Operations in Process Engineering			2			S2IAP_U01	30	60	2	1,5		Z		P	S	W
12	MSN1230	Thermodynamics in Process Engineering	1					S2IAP_W04	15	30	1	0,5		E			S	W
13	MSN1230	Thermodynamics in Process Engineering		1				S2IAP_U04	15	30	1	0,75		Z		P	S	W
14	MSN1410	Heat Exchangers and Evaporators	1					S2IAP_W05	15	30	1	0,5		Z			S	W
15	MSN1410	Heat Exchangers and Evaporators			1			S2IAP_U07	15	30	1	0,75		Z		P	S	W
		Total	8	2	6	3	1		300	600	20	13						

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 for BK classes[1]
lec	cl	lab	pr	sem				
13	2	9	3	2	435	900	30	19

Semester 2

Obligatory courses number of ECTS points 5

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	MSN0613	Modelling and Optimization	1					K2MBM_W04	15	60	2	1	T	E			K	Ob
2	MSN0613	Modelling and Optimization			2			K2MBM_U03	30	90	3	2,25	T	Z		P	K	Ob
		Total	1		2				45	150	5	3,25						

Optional courses (minimum 345 hours in semester, 25 ECTS points)

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	JZL100710BK	Foreign language level A1 or A2		3				K2MBM_U09	45	60	2	1,5	T	Z	O	P	KO	W
2	MSN0421	Suspension Separation Methods and Apparatus	1					S2IAP_W10	15	30	1	0,5		Z			S	W
3	MSN0421	Suspension Separation Methods and Apparatus		1				S2IAP_U13	15	30	1	0,75		Z		P	S	W
4	MSN0825	Property Measurements of Solutions, Suspensions and Granular Materials	2					S2IAP_W09	30	60	2	1		Z			S	W
5	MSN0825	Property Measurements of Solutions, Suspensions and Granular Materials			2			S2IAP_U12	30	60	2	1,5		Z		P	S	W
6	MSN0654	Thermo-diffusional Operations in Process Engineering	2					S2IAP_W07	30	60	2	1		E			S	W
7	MSN0654	Thermo-diffusional Operations in Process Engineering			2			S2IAP_U09	30	60	2	1,5		Z		P	S	W
8	MSN0654	Thermo-diffusional Operations in				1		S2IAP_U10	15	30	1	0,75		Z		P	S	W

No.	Course/group of courses code	Name of course/group of courses	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
		Process Engineering																
9	MSN0880	Complex Design of Process Engineering Systems	2					S2IAP_W08	30	60	2	1		Z			S	W
10	MSN0880	Complex Design of Process Engineering Systems				1		S2IAP_U11	15	30	1	0,75		Z		P	S	W
11	MSN1532	Master Individual Student Project					6	K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	90	270	9	4	T	Z		P	K	W
		Total	7	4	4	8			345	750	25	14,25						

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

[2]Traditional – enter T, remote – enter Z

[3]Exam – 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)

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

[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
8	4	6	8		390	900	30	1,5

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**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	MSN1492	Integrated Production Systems	2					K2MBM_W06	30	60	2	1	T	Z			K	Ob
2	MSN1492	Integrated Production Systems			1			K2MBM_U05	15	30	1	0,75	T	Z		P	K	Ob
3	MSN1560	Master Seminar					2	K2MBM_U06 K2MBM_U07 K2MBM_K01 K2MBM_K03 K2MBM_K04 K2MBM_K05	30	60	2	1,5	T	Z		P	K	Ob
		Total	2		1		2		75	150	5	3,25						

Optional courses (minimum 30 hours in semester, 22 ECTS points)

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
									Number of hours		Number of ECTS points				Course/group of courses			
1	HSN100200BK	Humanities course	1					K2MBM_W07 K2MBM_K02	15	30	1	0,5	T	Z	O		KO	W
2	ZSN100200BK	Menagment course	1					K2MBM_W08	15	30	1	0,5	T	Z	O		KO	W
3		Technical safety:																
	MSN0033	Failure analysis of machine and devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0033	Failure analysis of machine and devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0032	Analysis of turbomachinery damages	2					K2MBM_W05	30	60	2	1,00	T	Z			K	W
	MSN0032	Analysis of turbomachinery damages			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0034	Failure Analysis of Machines and Devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0034	Failure Analysis of Machines and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
4	MSN1610	Master thesis						K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05		600	20	4	T	Z		P	K	W
		Total	4		1				75	750	25	6,75						

[1]BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students
[2]Traditional – enter T, remote – enter Z
[3]Exam – 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)
[4]University-wide course /group of courses – enter O
[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
6		2		2	150	900	30	10

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
MSN0530	1. Mechatronics and Control Systems	1
MSN0651	2. Dynamic Operations in Process Engineering	
MSN1230	3. Thermodynamics in Process Engineering.	
MSN0613	1. Modelling and Optimization	2
MSN0654	2. Thermo-diffusional Operations in Process Engineering	

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

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

PLAN OF STUDIES

FACULTY OF MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: Mechanical Engineering and Machine Building

EDUCATION LEVEL: 2nd level, magister inżynier

FORM OF STUDIES: full-time

PROFILE: general academic

SPECIALIZATION: ENGINEERING OF AVIATION

LANGUAGE OF STUDY: Polish

Faculty Council Resolution of 29.09.2012

In effect since 1.10.2012

Plan of studies structure in point layout

30		master	
28		indywidual	
26		student	master
24		project	thesis
22			
...			

Generl education optional courses	
Directional obligatory courses	
Directional optional courses	
Specjalization optional courses	

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

Semester 1

Obligatory courses number of ECTS points 10

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	MSN0530	Mechatronics and Control Systems	2					K2MBM_W01	30	90	3	1,5	T	E			K	Ob
2	MSN0530	Mechatronics and Control Systems			2			K2MBM_U01	30	60	2	1,5	T	Z		P	K	Ob
3	MSN0462	Mechanics analytical	2					K2MBM_W03	30	60	2	1	T	Z			K	Ob
4	MSN1363	Modern engineering materials	1					K2MBM_W02	15	30	1	0,5	T	Z			K	Ob
5	MSN1363	Modern engineering materials			1			K2MBM_U02	15	30	1	0,75	T	Z		P	K	Ob
6	MSN1363	Modern engineering materials					1	K2MBM_U06	15	30	1	0,75	T	Z		P	K	Ob
		Total	**5**		**3**		**1**		135	300	10	6						**5**

Optional courses (minimum 300 hours in semester, 20 ECTS points)

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	MSN0080	Structure of aircrafts	2					S2ILO_W02	30	60	2	1	T	Z			S	W
2	MSN0080	Structure of aircrafts		1				S2ILO_U03	15	30	1	0,75	T	Z		P	S	W
3	MSN0269	Aircraft power systems	1					S2ILO_W08	15	30	1	0,5	T	Z			S	W
4	MSN0269	Aircraft power systems					1	S2ILO_U04	15	30	1	0,75	T	Z		P	S	W
5	MSN0790	Bases of the theory of oscillation	2					S2ILO_W03	30	60	2	1	T	E			S	W
6	MSN0790	Bases of the theory of oscillation		1				S2ILO_U05	15	30	1	0,75	T	Z		P	S	W
7	MSN0861	Aviation law	1					S2ILO_W06	15	30	1	0,5	T	Z			S	W
8	MSN0861	Aviation law					1	S2ILO_U10	15	30	1	0,75	T	Z		P	S	W
9	MSN0910	Design of propulsion units	2					S2ILO_W01	30	60	2	1	T	E			S	W
10	MSN0910	Design of propulsion units		1				S2ILO_U01	15	30	1	0,75	T	Z		P	S	W
11	MSN0910	Design of propulsion units				1		S2ILO_U02	15	30	1	0,75	T	Z		P	S	W

12	MSN1281	Durability and reliability of aircraft	2					S2ILO_W07	30	60	2	1	T	Z			S	W
13	MSN1371	Durability and reliability of aircraft	1					S2ILO_W04	15	30	1	0,5	T	Z			S	W
14	MSN1371	Selected problems on fluid mechanics		1				S2ILO_U06	15	30	1	0,75	T	Z		P	S	W
15	MSN1371	Selected problems on fluid mechanics			1			S2ILO_U07	15	30	1	0,75	T	Z		P	S	W
16	JZL100655BK	Foreign language (continuation), level B2+		1				K2MBM_U08	15	30	1	0,75	T	Z	O	P	KO	W
		Total	11	5	1	2	1		300	600	20	12,25						

[1]BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students
[2]Traditional – enter T, remote – enter Z
[3]Exam – 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)
[4]University-wide course /group of courses – enter O
[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
15	5	4	2	2	435	900	30	18,25

Semester 2

Obligatory courses number of ECTS points 5

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	MSN0613	Modelling and Optimization	1					K2MBM_W04	15	60	2	1	T	E			K	Ob
2	MSN0613	Modelling and Optimization			2			K2MBM_U03	30	90	3	2,25	T	Z		P	K	Ob
		Total	1		2				45	150	5	3,25						

Optional courses (minimum 345 hours in semester, 25 ECTS points)

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	JZL100655BK	Foreign language (second), any level		3				K2MBM_U09	45	60	2	1,5	T	Z	O	P	KO	W

No	Code	Course name	lec	cl	lab	pr	sem	Code	ZZU hours	CNPS	ECTS	BK	2	3	4	5	6	7
2	MSN1532	Master indyvidual student project				6		K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	90	270	9	4	T	Z		P	K	W
3	MSN0201	Flight dynamics and aeroelasticity of aircrafts	2					S2ILO_W05	30	60	2	1	T	E			S	W
4	MSN0201	Flight dynamics and aeroelasticity of aircrafts				2		S2ILO_U08	30	60	2	1,5	T	Z		P	S	W
5	MSN0490	Helicopter flight mechanics	2					S2ILO_W09	30	60	2	1	T	Z			S	W
6	MSN0490	Helicopter flight mechanics		1				S2ILO_U11	15	30	1	0,75	T	Z		P	S	W
7	MSN0490	Helicopter flight mechanics				1		S2ILO_U12	15	30	1	0,75	T	Z		P	S	W
8	MSN0562	Numerical methods in design of constructions				4		S2ILO_U09	60	120	4	3	T	Z		P	S	W
9	MSN1471	Safety management in aviation	2					S2ILO_W10	30	60	2	1	T	Z			S	W
		Total	6	4		13			345	750	25	14,5						

[1]BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students
[2]Traditional – enter T, remote – enter Z
[3]Exam – 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)
[4]University-wide course /group of courses – enter O
[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
7	4	2	13		390	900	30	17,75

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**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	MSN1560	Master Seminar					2	K2MBM_U06 K2MBM_U07 K2MBM_K01 K2MBM_K03 K2MBM_K04 K2MBM_K05	30	60	2	1,5	T	Z		P	K	Ob
2	MSN1492	Integrated Production Systems	2					K2MBM_W06	30	60	2	1	T	Z			K	Ob
3	MSN1492	Integrated Production Systems			1			K2MBM_U05	15	30	1	0,75	T	Z		P	K	Ob
		Total	2		1		2		75	150	5	3,25						

Optional courses (minimum 30 hours in semester, 22 ECTS points)

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	ZSN100200BK	Menagment course	1					K2MBM_W08	15	30	1	0,5	T	Z	O		K	W
2	HSN100200BK	Humanities course	1					K2MBM_W07 K2MBM_K02	15	30	1	0,5	T	Z	O		K	W
3		Technical safety:																
	MSN0033	Failure analysis of machine and devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0033	Failure analysis of machine and devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0032	Analysis of turbomachinery damages	2					K2MBM_W05	30	60	2	1,00	T	Z			K	W
	MSN0032	Analysis of turbomachinery damages			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0034	Failure Analysis of Machines and Devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0034	Failure Analysis of Machines and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
4	MSN1610	Master Thesis						K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	0	600	20	4	T	Z		P	K	W
		Total	4		1				75	750	25	6,75						

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

[2]Traditional – enter T, remote – enter Z

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 for BK classes[1]
lec	cl	lab	pr	sem				
6		2		2	150	900	30	10

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
MSN0530	1. Mechatronics and Control Systems	
MSN0790	2. Bases of the theory of oscillation	1
MSN0910	3. Design of propulsion units	
MSN0613	1. Modelling and Optimization	
MSN0201	2. Flight dynamics and aeroelasticity of aircrafts	2

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

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

PLAN OF STUDIES

FACULTY: FACULTY OF MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: MECHANICAL ENGINEERING AND MACHINE BUILDING

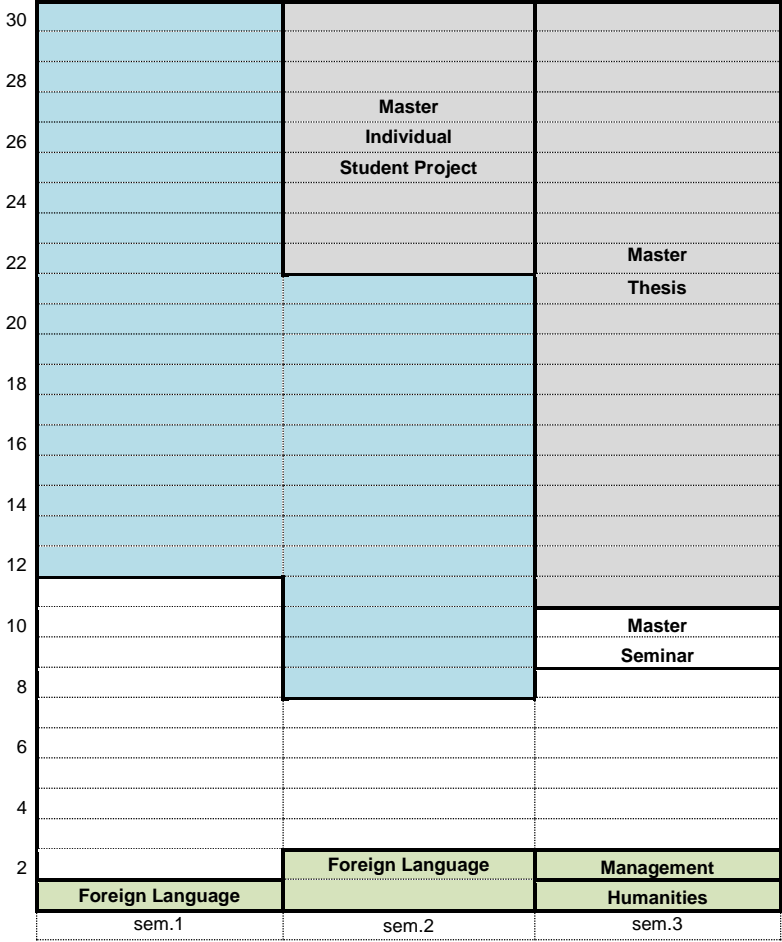**EDUCATION LEVEL**: 2nd level, magister inżynier

FORM OF STUDIES: full-time

PROFILE: general academic

SPECIALIZATION: **LOW TEMPERATURE ENGINEERING**

LANGUAGE OF STUDY: Polish

Faculty Council Resolution of 26.09.2012
In effect since 01.10.2012

Plan of studies structure in point layout

	sem.1	sem.2	sem.3
			Master Individual Student Project (sem.2) / Master Thesis (sem.3)

Chart values (vertical axis in points: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30)

- sem.2: Master Individual Student Project
- sem.3: Master Thesis
- sem.3: Master Seminar
- sem.1: Foreign Language
- sem.2: Foreign Language
- sem.3: Management, Humanities

Legend

General and optional courses

| Obligatory courses |
| Optional courses |
| Specialization/optional courses |

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

Semester 1

Obligatory courses number of ECTS points 10

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	MSN0462	Mechanics analytical	2					K2MBM_W03	30	60	2	1,00	T	Z			K	Ob
2	MSN1363	Modern Engineering Materials	1					K2MBM_W02	15	30	1	0,50	T	Z			K	Ob
3	MSN1363	Modern Engineering Materials			1			K2MBM_U02	15	30	1	0,75	T	Z		P	K	Ob
4	MSN1363	Modern Engineering Materials					1	K2MBM_U06	15	30	1	0,75	T	Z		P	K	Ob
5	MSN0530	Mechatronics and Control Systems	2					K2MBM_W01	30	90	3	1,50	T	E			K	Ob
6	MSN0530	Mechatronics and Control Systems			2			K2MBM_U01	30	60	2	1,50	T	Z		P	K	Ob
		Total	5		3		1		135	300	10	6,00						

Optional courses (minimum 300 hours in semester, 20 ECTS points)

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	JZL100655BK	Foreign Language (continuation), level B2+		1				K2MBM_U08	15	30	1	0,75	T	Z	O	P	KO	W
2	MSN1227	Thermodynamic Fundamentals of Low Temperature Engeenering	2					S2INN_W01	30	60	2	1,00	T	Z			S	W
3	MSN1227	Thermodynamic Fundamentals of Low Temperature Engeenering					1	S2INN_U01	15	30	1	0,75	T	Z		P	S	W
4	MSN0344	Cryogenics	2					S2INN_W02	30	60	2	1,00	T	E			S	W
5	MSN0344	Cryogenics		2				S2INN_U02	30	60	2	1,50	T	Z		P	S	W
6	MSN0344	Cryogenics			2			S2INN_U03	30	60	2	1,50	T	Z		P	S	W
7	MSN0162	Compressor and Absorption Refrigeration	2					S2INN_W03	30	60	2	1,00	T	E			S	W
8	MSN0162	Compressor and Absorption Refrigeration		1				S2INN_U04	15	30	1	0,75	T	Z		P	S	W
9	MSN0162	Compressor and Absorption Refrigeration			2			S2INN_U05	30	60	2	1,50	T	Z		P	S	W
10	MSN0411	Low Temperature Materials, Refrigerants and Cryogenic Fluids	2					S2INN_W04	30	60	2	1,00	T	Z			S	W
11	MSN0621	Standards and Design Codes	1					S2INN_W05	15	30	1	0,50	T	Z			S	W
12	MSN0272	Computer Aided Designing of Low Temperature Devices			2			S2INN_U06	30	60	2	1,50	T	Z		P	S	W
		Total	9	4	6		1		300	600	20	12,75						

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	4	9		2	435	900	30	18,75

Semester 2

Obligatory courses number of ECTS points 5

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	MSN0613	Modelling and Optimization	1					K2MBM_W04	15	60	2	1,00	T	E			K	Ob
2	MSN0613	Modelling and Optimization			2			K2MBM_U03	30	90	3	2,25	T	Z		P	K	Ob
		Total	2		1		2		75	150	5	3,25						

Optional courses (minimum 345 hours in semester, 25 ECTS points)

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	JZL100655BK	Foreign Language (second), any level		3				K2MBM_U09	45	60	2	1,50	T	Z	O	P	KO	W
2	MSN1052	Energy Conversion Systems	2					S2INN_W06	30	60	2	1,00	T	E			S	W
3	MSN1052	Energy Conversion Systems				2		S2INN_U07	30	60	2	1,50	T	Z		P	S	W
4	MSN1351	Low Temperature Devices and Installation	1					S2INN_W07	15	30	1	0,50	T	Z			S	W
5	MSN1351	Low Temperature Devices and Installation				3		S2INN_U08	45	90	3	2,25	T	Z		P	S	W
6	MSN1152	Gas and Cryogenic Technologies	1					S2INN_W08	15	30	1	0,50	T	Z			S	W
7	MSN1152	Gas and Cryogenic Technologies					1	S2INN_U09	15	30	1	0,75	T	Z		P	S	W
8	MSN1053	Cryogenic Systems	1					S2INN_W09	15	30	1	0,50	T	Z			S	W
9	MSN1053	Cryogenic Systems				1		S2INN_U10	15	30	1	0,75	T	Z		P	S	W
10	MSN0615	Applied Superconductivity	1					S2INN_W10	15	30	1	0,50	T	Z			S	W

11	MSN0622	Numerical Analysis of Flow Phenomena			1			S2INN_U11	15	30	1	0,75	T	Z		P	S	W
12	MSN1532	Master Individual Student Project				6		K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	90	270	9	4,00	T	Z		P	K	W
		Total	6	3	1	12	1		345	750	25	14,50						

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

[2]Traditional – enter T, remote – enter Z

[3]Exam – 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)

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

[5]Practical 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

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				
7	3	3	12	1	390	900	30	17,75

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]			university-wide[4]	practical[5]	kind[6]	type[7]
1	MSN1560	Master Seminar					2	K2MBM_U06 K2MBM_U07 K2MBM_K01 K2MBM_K03 K2MBM_K04 K2MBM_K05	30	60	2	1,50	T	Z		P	K	Ob
2	MSN1492	Integrated Production Systems	2					K2MBM_W06	30	60	2	1,00	T	Z			K	Ob
3	MSN1492	Integrated Production Systems			1			K2MBM_U05	15	30	1	0,75	T	Z		P	K	Ob
		Total	2		1		2		75	150	5	3,25						

Optional courses (minimum 300 hours in semester, 25 ECTS points)

No	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/ group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	HSN100200BK	Humanities Course	1					K2MBM_W07 K2MBM_K02	15	30	1	0,50	T	Z	O		KO	W
2	ZSN100200BK	Management Course	1					K2MBM_W08	15	30	1	0,50	T	Z	O		KO	W
3		Technical safety:																
	MSN0033	Failure analysis of machine and devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0033	Failure analysis of machine and devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0032	Analysis of turbomachinery damages	2					K2MBM_W05	30	60	2	1,00	T	Z			K	W
	MSN0032	Analysis of turbomachinery damages			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0034	Failure Analysis of Machines and Devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0034	Failure Analysis of Machines and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
4	MSN1610	Master Thesis						K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05		600	20	4,00	T	Z		P	K	W
		Total	4		1				75	750	25	6,75						

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

[2]Traditional – enter T, remote – enter Z

[3]Exam – 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)

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

[5]Practical 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

Altogether in semester3:

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				
6		2		2	150	900	30	10,00

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
MSN0530	1. Mechatronics and Control Systems	

MSN0344	2. Cryogenics	1
MSN0162	3. Compressor and Absorption Refrigeration	
MSN0613	1. Modelling and Optimisation	2
MSN1052	2. Energy Conversion Systems	

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

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

PLAN OF STUDIES

FACULTY: Mechanical and Power Engineering

MAIN FIELD OF STUDY: Mechanical Engineering and Machine Building

EDUCATION LEVEL: 2nd level, magister inżynier

FORM OF STUDIES: full-time

PROFILE: general academic

SPECIALIZATION: **POWER ENGINEERING MACHINES AND DEVICES**

LANGUAGE OF STUDY: Polish language

Faculty Council Resolution of 26th September 2012

In effect since 1st October 2012

Plan of studies structure in point layout

	sem.1	sem.2	sem.3
30		Master	Master
28		Individual	Thesis
26		Student Project	
10			Master
			Seminar
2		Foreign Language	Management
	Foreign Language		Humanities

Legend

General and optional courses
Obligatory courses
Optional courses
Specialization/optional courses

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

Semester 1

Obligatory courses number of ECTS points 10

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	MSN0462	Mechanics analytical	2					K2MBM_W03	30	60	2	1	T	Z			K	Ob
2	MSN1363	Modern engineering materials	1					K2MBM_W02	15	30	1	0,5	T	Z			K	Ob
3	MSN1363	Modern engineering materials			1			K2MBM_U02	15	30	1	0,75	T	Z		P	K	Ob
4	MSN1363	Modern engineering materials					1	K2MBM_U06	15	30	1	0,75	T	Z		P	K	Ob
5	MSN0530	Mechatronics and Control Systems	2					K2MBM_W01	30	90	3	1,5	T	E			K	Ob
6	MSN0530	Mechatronics and Control Systems			2			K2MBM_U01	30	60	2	1,5	T	Z		P	K	Ob
		Total	5	3		1			135	300	10	6						

Optional courses (minimum 300 hours in semester, 20 ECTS points)

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	JZL100655BK	Foreign language (continuation), B2+ level		1				K2MBM_U08	15	30	1	0,75	T	Z	O	P	KO	W
2	MSN0300	Boiler's design and equipment	1					S2MUE_W01	15	30	1	0,5	T	E			S	W
3	MSN0300	Boiler's design and equipment				2		S2MUE_U06	30	60	2	1,5	T	Z		P	S	W
4	MSN0670	Burners and furnaces	1					S2MUE_W02	15	30	1	0,5	T	Z			S	W
5	MSN0670	Burners and furnaces					1	S2MUE_U07	15	30	1	0,75	T	Z		P	S	W
6	MSN0850	Special pumps	2					S2MUE_W03	30	60	2	1	T	Z			S	W
7	MSN0950	Pipelines and armature	2					S2MUE_W04	30	60	2	1	T	Z			S	W
8	MSN0981	Thermal engines	1					S2MUE_W05	15	30	1	0,5	T	Z			S	W
9	MSN0981	Thermal engines					1	S2MUE_U08 K2MBM_K04	15	15	1	0,75	T	Z		P	S	W
10	MSN1320	Turbines for Gas–steam Systems	2					S2MUE_W06	30	60	2	1	T	E			S	W
11	MSN1320	Turbines for Gas–steam Systems		1				S2MUE_U09	15	30	1	0,75	T	Z		P	S	W
12	MSN1310	Turbines and hydroelectric power plants	2					S2MUE_W07	30	60	2	1	T	Z			S	W
13	MSN1310	Turbines and hydroelectric power plants		1				S2MUE_U10	15	30	1	0,75	T	Z		P	S	W
14	MSN1260	Hydraulic transport	1					S2MUE_W08	15	30	1	0,5	T	Z			S	W
15	MSN1260	Hydraulic transport			1			S2MUE_U11	15	30	1	0,75	T	Z		P	S	W
		Total	12	3	1	3	1		300	600	20	14						

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

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 for BK classes[1]
lec	cl	lab	pr	sem				
17	3	4	3	2	435	900	30	18

Semester 2

Obligatory courses number of ECTS points 5

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	MSN0613	Modelling and Optimization	1					K2MBM_W04	15	60	2	1	T	E			K	Ob
2	MSN0613	Modelling and Optimization		2				K2MBM_U03	30	90	3	2,25	T	Z		P	K	Ob
		Total	1	2					45	150	5	3,25						

Optional courses (minimum 345 hours in semester, 25 ECTS points)

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	JZL100655BK	Foreign language (second), any level		3				K2MBM_U09	45	60	2	1,5	T	Z	O	P	KO	W
2	MSN1532	Msc project design				6		K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	90	270	9	4	T	Z		P	K	W
3	MSN0070	Investigation of hydraulic machinery	1					S2MUE_W09	15	30	1	0,5	T	Z			S	W
4	MSN0070	Investigation of hydraulic machinery			2			S2MUE_U01	30	60	2	1,5				P	S	W
5	MSN0220	Utilization of power engineering devices and	2					S2MUE_W11	30	60	2	1	T	E			S	W

No.	Course/group of courses code	Name of course/group of courses	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
		machines																
6	MSN0220	Utilization of power engineering devices and machines		1				S2MUE_U02	15	30	1	0,75	T	Z		P	S	W
7	MSN0290	Constructions Types of the Special Turbines	2					S2MUE_W11	30	60	2	1	T	Z			S	W
8	MSN0290	Constructions Types of the Special Turbines		1				S2MUE_U03	15	30	1	0,75	T	Z		P	S	W
9	MSN0330	Boilers and Small Power	2					S2MUE_W12	30	60	2	1	T	Z			S	W
10	MSN0330	Boilers and Small Power		1				S2MUE_U04	15	30	1	0,75	T	Z		P	S	W
11	MSN1270	Mechanical and pneumatically transportation of grainy materials	1					S2MUE_W13	15	30	1	0,5	T	Z			S	W
12	MSN1270	Mechanical and pneumatically transportation of grainy materials		1				S2MUE_U05 K2MBM_K04	15	30	1	0,75	T	Z		P	S	W
		Total	8	7	2	6			345	750	25	14						

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

[2]Traditional – enter T, remote – enter Z

[3]Exam – 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)

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

[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
9	9	2	6		390	900	30	17,25

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**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/ group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	MSN1492	Integrated Production Systems	2					K2MBM_W06	30	60	2	1	T	Z			K	Ob
2	MSN1492	Integrated Production Systems			1			K2MBM_U05	15	30	1	0,75	T	Z		P	K	Ob
3	MSN1560	Diploma Seminar					2	K2MBM_U06 K2MBM_U07 K2MBM_K01 K2MBM_K03 K2MBM_K04 K2MBM_K05	30	60	2	1,5	T	Z		P	K	Ob
		Total	2		1		2		75	150	5	3,25						

Optional courses (minimum 30 hours in semester, 22 ECTS points)

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	lec	cl	lab	pr	sem	Field-of-study educational effect symbol	ZZU	CNPS	total	BK classes[1]	Form[2] of course/ group of courses	Way[3] of crediting	university-wide[4]	practical[5]	kind[6]	type[7]
1	HSN100200BK	Humanities Course	1					K2MBM_W07 K2MBM_K02	15	30	1	0,5	T	Z	O		KO	W
2	ZSN100200BK	Managements Course	1					K2MBM_W08	15	30	1	0,5	T	Z	O		KO	W
3		Technical safety:																
	MSN0033	Failure analysis of machine and devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0033	Failure analysis of machine and devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0032	Analysis of turbomachinery damages	2					K2MBM_W05	30	60	2	1,00	T	Z			K	W
	MSN0032	Analysis of turbomachinery damages			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0034	Failure Analysis of Machines and Devices	2					K2MBM_W05 K2MBM_K05	30	60	2	1,00	T	Z			K	W
	MSN0034	Failure Analysis of Machines and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
4	MSN1610	Master Thesis						K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05		600	20	4,00	T	Z		P	K	W
		Total	4		1				75	750	25	6,75						

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

[2]Traditional – enter T, remote – enter Z

[3]Exam – 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)

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

[5]Practical 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

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 for BK classes[1]
lec	cl	lab	pr	sem				
6		2		2	150	900	30	10

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
MSN0530	1. Mechatronics and Control Systems	1
MSN0300	2. Boiler's design and equipment	
MSN1320	3. Turbines for Gas–steam Systems	
MSN0613	1. Modelling and Optimization	2
MSN0220	2. Utilization of power engineering devices and machines	

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

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