PLAN OF STUDY

FACULTY: MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: MECHANICAL ENGINEERING AND MACHINE BUILDING

EDUCATION LEVEL: 2nd level, Master of Science

FORM OF STUDIES: full-time

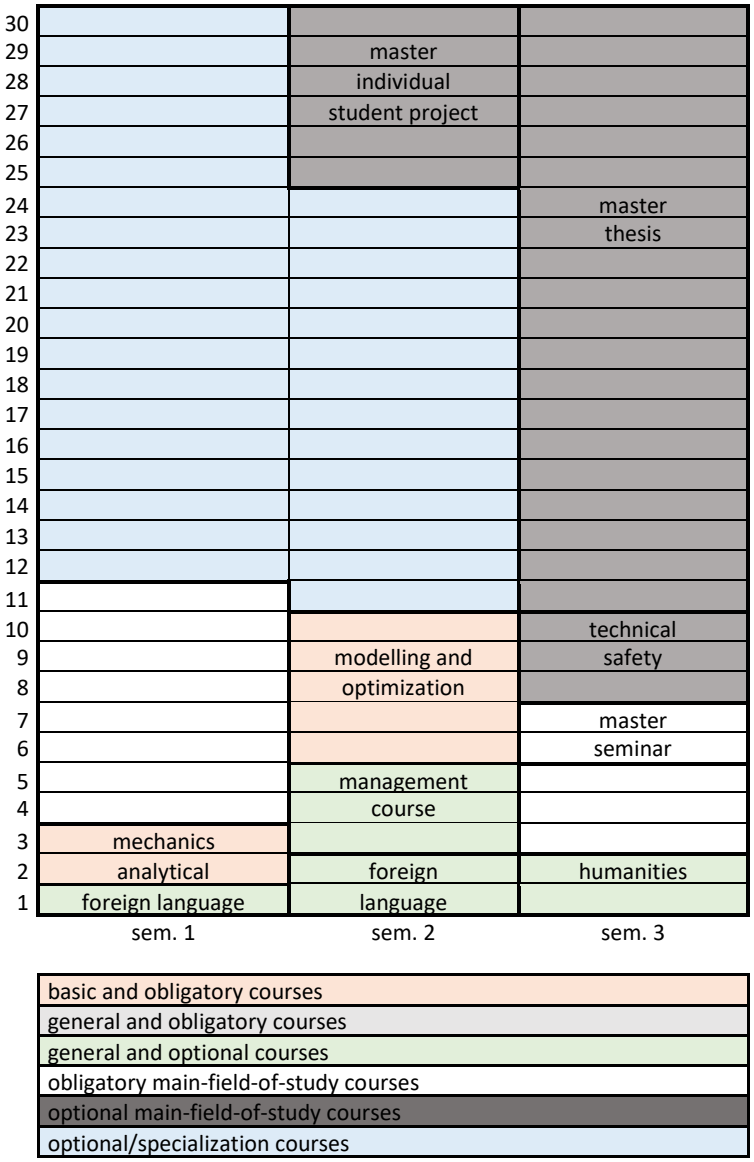
PROFILE: general academic

SPECIALIZATION: **PROCESS SYSTEMS ENGINEERING**

LANGUAGE OF STUDY: polish

Faculty Council Resolution of 20.09.2017
In effect since 01.10.2017

Plan of studies structure in point layout



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) number of ECTS points 20

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				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

[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

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]
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 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				
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]			universit y-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						

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[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

Optional courses (minimum 375 hours in semester) number of ECTS points 25

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 (second), any level		3				K2MBM_U09	45	60	2	1,5	T	Z	O	P	KO	W
2	ZSN100400BK	Management Course	2					K2MBM_W08 K2MBM_K05	30	90	3	1,5	T	Z	O		KO	W
3	MSN0421	Suspension Separation Methods and Apparatus	1					S2IAP_W10	15	30	1	0,5		Z			S	W
4	MSN0421	Suspension Separation Methods and Apparatus		1				S2IAP_U13	15	30	1	0,75		Z		P	S	W
5	MSN0825	Property Measurements of Solutions, Suspensions and Granular Materials	2					S2IAP_W09	30	60	2	1		Z			S	W
6	MSN0825	Property Measurements of Solutions, Suspensions and Granular Materials			2			S2IAP_U12	30	60	2	1,5		Z		P	S	W
7	MSN0654	Thermo-diffusional Operations in Process Engineering	2					S2IAP_W07	30	60	2	1		E			S	W
8	MSN0654	Thermo-diffusional Operations in Process Engineering			2			S2IAP_U09	30	60	2	1,5		Z		P	S	W
9	MSN0654	Thermo-diffusional Operations in Process Engineering				1		S2IAP_U10	15	30	1	0,75		Z		P	S	W
10	MSN0880	Complex Design of Process Engineering Systems	2					S2IAP_W08	30	60	2	1		Z			S	W
11	MSN0880	Complex Design of Process Engineering Systems				1		S2IAP_U11	15	30	1	0,75		Z		P	S	W
12	MSN1534	Master Individual Student Project				6		K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05	90	180	6	1	T	Z		P	K	W
		Total	9	4	4	8			375	750	25	12,75						

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				
10	6	4	8		420	900	30	16

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[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

Semester 3

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	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 60 hours in semester) number of ECTS points 25

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	HSN100400BK	Humanities Course	1					K2MBM_W07 K2MBM_K02 K2MBM_K06	15	60	2	1	T	Z	O		KO	W
		Technical Safety:																
	MSN0033	Failure Analysis of Machine and Devices	2					K2MBM_W05	30	60	2	1	T	Z			K	W
	MSN0033	Failure Analysis of Machine and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
	MSN0034	Failure Analysis of Machines and Devices	2					K2MBM_W05	30	60	2	1	T	Z			K	W
	MSN0034	Failure Analysis of Machines and Devices			1			K2MBM_U04	15	30	1	0,75	T	Z		P	K	W
3	MSN1610	Master Thesis						K2MBM_U07 K2MBM_K01 K2MBM_K04 K2MBM_K05		600	20	4	T	Z		P	K	W
		Total	3		1				60	750	25	6,75						

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[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 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		2		2	135	900	30	10

2. Set of examinations in semestral arrangement

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

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

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