

PLAN OF STUDIES

FACULTY: ELECTRONICS

MAIN FIELD OF STUDY: CONTROL ENGINEERING AND ROBOTICS

EDUCATION LEVEL: 2nd level, magister inżynier

FORM OF STUDIES: full-time

PROFILE: general academic

SPECIALIZATION: Embedded Robotics (AER)

LANGUAGE OF STUDY: English

Faculty Council Resolution of

In effect since

*delete as applicable

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

Semester 1

Obligatory courses number of ECTS points 3

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	FLEA00002S	Social Communication					1	K2AIR_K01	15	30	2	1	T	Z	O		KO	Ob
2	FZP0049001W	Physics	1					K2AIR_W02	15	30	1	0,5	T	Z	O		PD	Ob
Total			1	0	0	0	1	-	30	60	3	1.5	-	-	-	P(0)	-	-

Groups of obligatory courses number of ECTS points 24

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	AREA00005W	Control Theory (GK)	2					K2AIR_W04	30	60	6	2	T	E(w)			K	Ob
2	AREA00005C	Control Theory (GK)		1				K2AIR_U04	15	60		1	T	Z		P (2)	K	Ob
3	AREA00005L	Control Theory (GK)			2			K2AIR_U05	30	60		2	T	Z		P (3)	K	Ob
4	AREA15004W	Modeling and Identification (GK)	2					K2AIR_W05	30	90	5	1	T	Z(w)			K	Ob
5	AREA15004L	Modeling and Identification (GK)			2			K2AIR_U06	30	90		2	T	Z		P (2)	K	Ob
6	AREA00006W	Applied Logic (GK)	1					K2AIR_W01	15	30	3	0,5	T	Z(w)			PD	Ob
7	AREA00006C	Applied Logic (GK)		1				K2AIR_W01	15	30		1	T	Z			PD	Ob
8	AREA17002W	Mathematical Methods of Automation and Robotics (GK)	2					K2AIR_W07	30	80	5	2	T	E(w)			K	Ob
9	AREA17002C	Mathematical Methods of Automation and Robotics (GK)		2				K2AIR_U08	30	100		2	T	Z		P (3)	K	Ob
10	AREA00116W	Embedded Systems (GK)	2					K2AIR_W09	30	90	5	2	T	E(w)			K	Ob
11	AREA00116L	Embedded Systems (GK)			2			K2AIR_U09	30	90		2	T	Z		P(2)	K	Ob
Total			9	4	6	0	0	-	285	780	24	17,5	-	-	-	P (12)	-	-

Optional courses (minimum 30 hours in semester, 3 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			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1		Foreign language 1 - B2+ level		1				K2AIR_U01	15	30	1	1	T	Z	O	P (1)	KO	W
2		Foreign language 2 – A1 level		3				K2AIR_U02	45	60	2	2	T	Z	O	P (2)	KO	W
Total			0	4	0	0	0	–	60	90	3	3	–	–	–	P (3)	–	–

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				
10	8	6	0	1	375	930	30	22

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

Semester 2

Optional courses – *Embedded Robotics (ARE)* (minimum 60 hours in semester, 4 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			universit y-wide ⁴	practica l ⁵	kind ⁶	type ⁷
1	AREA17107P	Intermediate Project				2		S2AER_U09	30	60	3	1	T	Z		P(2)	S	Ob
2	AREA00108S	Specialization Seminar				2		S2AER_U10	30	60	2	1	T	Z		P(2)	S	Ob
Total			0	0	0	2	2	-	60	120	5	2	-	-	-	P(4)	-	-

Groups of optional courses – *Embedded Robotics (ARE)* (minimum 240 hours in semester, 26 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			universit y-wide ⁴	practica l ⁵	kind ⁶	type ⁷
1	AREA00117W	Sensors and Actuators	1					S2AER_W01	15	30	3	0,5	T	Z(w)			S	Ob
2	AREA00117L	Sensors and Actuators			1			S2AER_U01	15	60		1	T	Z		P(2)	S	Ob
3	AREA00103W	Robotic Programming Environments (GK)	1					S2AER_W02	15	30	4	0,5	T	Z			S	Ob
4	AREA00103L	Robotic Programming Environments (GK)			2			S2AER_U02	30	90		1,5	T	Z		P(2)	S	Ob
5	AREA00104W	Control Theory for Embedded Systems (GK)	2					S2AER_W03	30	60	5	1	T	E(w)			S	Ob
6	AREA00104C	Control Theory for Embedded Systems (GK)		1				S2AER_U03	15	45		1	T	Z		P(1.5)	S	Ob
7	AREA00104L	Control Theory for Embedded Systems (GK)			1			S2AER_U08	15	45		1	T	Z		P(1.5)	S	Ob
8	AREA17105W	Event-based control (GK)	2					S2AER_W05	30	60	5	1	T	Z(w)			S	Ob
9	AREA17105P	Event-based control (GK)				2		S2AER_U05	30	60		2	T	Z		P(2)	S	Ob
10	AREA00106W	Artificial Intelligence and Machine Learning (GK)	2					S2AER_W06	30	60	5	1	T	E(w)			S	Ob
11	AREA00106P	Artificial Intelligence and Machine Learning (GK)				2		S2AER_U14	30	90		1	T	Z		P(3)	S	Ob
12	AREA00118W	Theory and Methods of Optimization (GK)	1					K2AIR_W06	15	45	3	1	T	Z(w)			K	Ob

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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

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13	AREA00118C	Theory and Methods of Optimization (GK)		1				K2AIR_U07	15	30		1	T	Z		P (1)	K	Ob
Total			9	2	4	4	0	-	285	705	25	13,5	-	-	-	P(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				
9	2	4	6	2	345	825	30	15,5

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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

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Semester 3

Optional courses – *Embedded Robotics (ARE)* (minimum 75 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/g roup of courses	Way ³ of crediti ng	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practica l ⁵	kind ⁶	type ⁷
4	AREA15110	Diploma Project						K2AIR_U09	450	15	7	T	Z		P(10)	S	Ob	
5	AREA00109S	Diploma Seminar					2	S2AER_U13	30	90	3	1,5	T	Z		P(3)	S	Ob
Total			0	0	0	0	2	-	30	540	18	8,5	-	-	-	P(13)	-	-

Groups of optional courses – *Embedded Robotics (ARE)* (minimum 105 hours in semester, 8 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/g roup of courses	Way ³ of crediti ng	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practica l ⁵	kind ⁶	type ⁷
1	AREA00119W	Mobile Robotics (GK)	1					S2AER_W04	15	30	3	0,5	T	Z(w)			S	Ob
2	AREA00119L	Mobile Robotics (GK)			2			S2AER_U04	30	90		1,5	T	Z		P(2)	S	Ob
3	AREA17113W	Task and Motion Planning (GK)	2					S2AER_W07	30	60	3	1	T	Z(w)			S	Ob
4	AREA17113S	Task and Motion Planning (GK)					1	S2AER_U06	15	30		0,5	T	Z		P(1)	S	Ob
5	AREA00120W	Social Robots (GK)	1					S2AER_W08	15	30	3	0,5	T	Z(w)			S	Ob
6	AREA00120L	Social Robots (GK)			1			S2AER_U07	15	30		1,5	T	Z		P(2)	S	Ob
7	ZMZ00387W	Entrepreneurship (GK)	1					K2AIR_W03	15	30	3	1	T	Z(w)	O		KO	Ob
8	ZMZ00387S	Entrepreneurship (GK)					1	K2AIR_K02	15	30		1	T	Z	O		KO	Ob
Total			5	0	3	0	2	-	90	180	12	7,5	-	-	-	P(5)	-	-

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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

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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				
5	0	3	0	4	120	720	30	16

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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

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2. Set of examinations in semestral arrangement

Course code	Names of courses ending with an examination	Semester
AREA00005	Control Theory	1
AREA17002	Mathematical Methods of Automation and Robotics	1
AREA00104	Control Theory for Embedded Systems	2
AREA00106	Artificial Intelligence and Machine Learning	2

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

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

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Opinion of student government legislative body

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Date

.....

Name and surname, signature of student representative

.....

Date

.....

Dean's signature

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