

## PLAN OF STUDIES

**FACULTY:**..... Electronics.....

**MAIN FIELD OF STUDY:** ..... Electronic and Computer Engineering.....

**EDUCATION LEVEL:** first-level

**FORM OF STUDIES:** full-time studies

**PROFILE:** general academic

**SPECIALIZATION:**.....None.....

**LANGUAGE OF STUDY:** .....**English**.....

In effect since .....2021/2022.....

### Plan of studies structure (optionally)

1) in ECTS point layout

(space for scheme of plan)

h/sem.	I	II	III	IV	V	VI	VII					
30	Metrology 4	Electronics 8	Electronic components and sensors 8	Electronic circuits 8			Final project 12					
29												
28												
27												
26	Introduction to Programming 8	Object oriented programming 5	Electronic Technology 5	Programming Systems and Environments 4	Optional course 1 21	Optional course 2 21						
25												
24												
23												
22	Math - Algebra 8	Physics 6	Scientific and engineering programming 5	Fundamentals of Telecommunication 4			Internship 6					
21												
20												
19												
18	Math - Analysis 1 8	Math - Analysis 5	Python 3	Introduction to Microcontrollers 8			Diploma Seminar 3					
17												
16												
15												
14	Math - Analysis 1 8	Math of Electronics 4	Physics for electronics 6	Introduction to Automation 3	Computer Networks 4	Electroacoustics 4	Optional course 3 6					
13												
12												
11												
10	Philosophy 2	Foreign language 2	Foreign language 3	Introduction to Robotics 3	Microcontrollers 5	Team and preengineering project 5	Copyright 2					
9												
8												
7												
6												
5												
4												
3												
2												
1							Entrepreneurship 1					

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2) in hourly layout  
(space for scheme of plan)

h/sem.	I	II	III	IV	V	VI	VII	
28								
27								
26		Electronics 33200 <b>ECEA00003</b>	Electronic components and sensors 31200 E <b>ECEA00016</b>	Electronic circuits 20220 E  <b>ECEA00009</b>				
25								
24								
23								
22								
21			Electronic Technology 20200 <b>ECEA00006</b>	Programming Systems and Environments 20200 <b>ECEA00010</b>			Final project 12h  <b>ECEA17100</b>  Internship  <b>ECEP16001Q</b>	
20		Object oriented programming 20200 E <b>ECEA17004</b>			Scienific and engineering programming 20200 <b>ECEA00007</b>	Fundamentals of Telecommunication 20200 <b>ECEA00021</b>		Optional course 1
19	Metrology 11200 <b>ECEA00001</b>	Math - Analysis 22000 E <b>MAT001510</b>	Python 10100	Introduction to Microcontrollers 21300 E <b>ECEA00022</b>	15h	15h		
18								
17								
16								
15	Introduction to Programming 20300 <b>ECEA00002</b>	Math for Electronics 22000 <b>MAT001512</b>	Physics for electronics 22000 <b>ECEA00014</b>	Introduction to Automation 20100 <b>ECEA00019</b>	<b>ECEA19001BK</b>	<b>ECEA00002BK</b>		
14								
13							Diploma Seminar 00002 <b>ECEA17105</b>	
12								
11								
10	Math - Algebra 22000 E <b>MAT001654</b>	Physics 20200 E <b>FZP001127</b>	Foreign language 00400 <b>JZL100928</b>	Introduction to Robotics 20100 <b>ECEA00020</b>	Computer Networks 20200 <b>ECEA00101</b>	Electroacoustics 20200 <b>ECEA00103</b>	Optional course 3 6h <b>ECEA00003BK</b>	
9								
8								
7	Math - Analysis 22000 E <b>MAT001653</b>	Foreign language 00400 <b>JZL100927</b>	Sport 2h WFW03000	Sport 2h WFW03000	Microcontrollers 20210 E <b>ECEA19202</b>	Team and preengineering project 00030 <b>ECEA00106</b>	Copyright 20000 <b>PRZ000339</b>	
6								
5							Entrepreneurship 20000 <b>ZMZ001048</b>	
4								
3	Philosophy 20000 <b>FLEA100</b>							
2								
1								

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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

## Semester 1

### Obligatory courses / groups of courses Number of ECTS points ...28..

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00002	Introduction to Programming GK	2		3			K1EAC_W03 K1EAC_U03	75	240	8	8	6	T	Z(lec)			4	KO
2	MAT001653	Math - Analysis 1 GK	2	2				K1EAC_W01 K1EAC_U01	60	240	8	8	2	T	E(lec)	O		3	KP
3	MAT001654	Math - Algebra GK	2	2				K1EAC_W01 K1EAC_U01	60	240	8	8	2	T	E(lec)	O		3	KP
4	ECEA00001	Metrology GK	1	1	2			K1EAC_W02 K1EAC_U02	60	120	4	4	2	T	Z(lec)			3	KP
Total			7	7	5	5	0	0	255	840	28	28	12	-	-	-	-	13	

### Optional courses / groups of courses (minimum ...30.. hours in semester, ...2.... ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	FLEA00100	Philosophy	2					K1EAC_K01	30	60	2	2	1	T	Z	O		0	KO
Total			2	0	0	0	0	-	30	60	2	0	1	-	-	-		0	-

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

## Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>9</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>285</b>	<b>900</b>	<b>30</b>	<b>30</b>	<b>13</b>

## Semester 2

### Obligatory courses / groups of courses      Number of ECTS points ...28.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	MAT001510	Math - Analysis 2 <b>GK</b>	2	2				K1EAC_W01 K1EAC_U01	60	150	5	5	2	T	E(lec)	O		2	KP
2	FZP001127	Physics <b>GK</b>	2		2			K1EAC_W02 K1EAC_U02	60	180	6	6	2	T	E(lec)	O		3	KP
3	MAT001512	Math for Electronics <b>GK</b>	2	2				K1EAC_W01 K1EAC_U01	60	120	4	4	2	T	Z(lec)			2	KP
4	ECEA17004	Object oriented programming <b>GK</b>	2		2			K1EAC_W03 K1EAC_U03	60	150	5	5	3	T	E(lec)			3	KP
5	ECEA00003	Electronics <b>GK</b>	3	3	2			K1EAC_W04 K1EAC_U04	120	240	8	8	4	T	Z(lec)			5	K
Total			<b>11</b>	<b>7</b>	<b>6</b>	<b>0</b>	<b>0</b>	-	<b>360</b>	<b>840</b>	<b>28</b>	<b>28</b>	<b>13</b>	-	-	-		<b>15</b>	-

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

**Optional courses / groups of courses (minimum ...4... hours in semester, ...2.... ECTS points)**

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	From the university pool	Foreign language- A1/A2/B1/B2.1/C1.1		4				K1EAC_U13	60	60	2		2	T	Z	O		2	KO
Total			<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	-	<b>60</b>	<b>60</b>	<b>2</b>		<b>2</b>	-	-	-		<b>2</b>	-

**Altogether in semester**

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>11</b>	<b>11</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>420</b>	<b>900</b>	<b>30</b>	<b>28</b>	<b>15</b>

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

## Semester 3

### Obligatory courses / groups of courses Number of ECTS points ...27.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00014	Physics for Electronics <b>GK</b>	2	2				K1EAC_W02 K1EAC_U02	60	180	6	6	2	T	Z(lec)			3	KP
2	ECEA00007	Scientific_and_Engineering_Programming <b>GK</b>	2		2			K1EAC_W03 K1EAC_U03	60	150	5	5	2	T	Z(lec)			3	K
3	ECEA00016	Electronic_Components_and_Sensors <b>GK</b>	3	1	2			K1EAC_W04 K1EAC_U04	90	240	8	8	3	T	E(lec)			5	K
4	ECEA00006	Electronic_Technology <b>GK</b>	2		2			K1EAC_W04 K1EAC_U04	60	150	5	5	3	T	Z(lec)			3	K
5	ECEA00025	Python <b>GK</b>	1	1				K1EAC_W03 K1EAC_U03	30	90	3	3	2	T	Z(lec)			2	K
Total			<b>10</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>0</b>	-	<b>300</b>	<b>810</b>	<b>27</b>	<b>27</b>	<b>12</b>	-	-	-	-	<b>16</b>	-

### Optional courses / groups of courses (minimum ...120... hours in semester, ...3.... ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	From the university pool	Sport		4				K1EAC_K05	60	0	0		0	T	Z	O			KO
2	From the university pool	Foreign language – B2.2/C1.2		4				K1EAC_U13	60	90	3		2	T	Z	O		3	KO
Total			<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	-	<b>120</b>	<b>90</b>	<b>3</b>		<b>4</b>	-	-	-	-	<b>3</b>	-

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

## Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>10</b>	<b>12</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>420</b>	<b>900</b>	<b>30</b>	<b>27</b>	<b>16</b>

## Semester 4

### Obligatory courses / groups of courses Number of ECTS points ...30.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00010	Programming Systems & Environments <b>GK</b>	2		2			K1EAC_W03 K1EAC_U03	60	120	4	4	2	T(lec)	Z			2	K
2	ECEA00022	Introduction_to_Microcontrollers <b>GK</b>	3		2	1		K1EAC_W07 K1EAC_U07	90	240	8	8	5	T(lec)	E			4	K
3	ECEA00009	Electronic_circuits <b>GK</b>	2		2	2		K1EAC_W04 K1EAC_U04	90	210	8	8	4	T(lec)	E			5	K
4	ECEA00019	Introduction to Automation <b>GK</b>	2		1			K1EAC_W05 K1EAC_U05	45	120	3	3	2	T(lec)	Z			2	K
5	ECEA00020	Introduction to Robotics <b>GK</b>	2		1			K1EAC_W05 K1EAC_U05	45	90	3	3	2	T(lec)	Z			2	K
6	ECEA00021	Fundamentals_of_Telecommunication <b>GK</b>	2		2			K1EAC_W06 K1EAC_U06	60	120	4	4	2	T(lec)	Z			2	K
Total			<b>13</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>0</b>	-	<b>390</b>	<b>900</b>	<b>30</b>	<b>30</b>	<b>17</b>	-	-	-	-	<b>17</b>	-

### Optional courses / groups of courses (minimum ...0... hours in semester, ...0.... ECTS points)

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses



## Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>13</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>390</b>	<b>900</b>	<b>30</b>	<b>30</b>	<b>17</b>

## Semester 5

### Obligatory courses / groups of courses Number of ECTS points ...9.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00101	Computer_Networks <b>GK</b>	2		2			K1EAC_W10 K1EAC_U10	60	120	4	4	2	T	Z(lec)			2	K
2	ECEA19202	Microcontrollers <b>GK</b>	2		2	1		K1EAC_W07 K1EAC_U07	75	150	5	5	4	T	E(lec)			3	K
Total			<b>4</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	-	<b>135</b>	<b>270</b>	<b>9</b>	<b>9</b>	<b>6</b>	-	-	-	-	<b>5</b>	-

### Optional courses / groups of courses (minimum ...225... hours in semester, ...21.... ECTS points; choice 3 of 5)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00201	Advanced Topics in Robotics <b>GK</b>	2			2	1	K1EAC_W05 K1EAC_U05	75	210	7	7	4	T	Z(lec)			4	K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2	ECEA00102	Digital Signal Processing <b>GK</b>	2		3			K1EAC_W07 K1EAC_U07	75	210	7	7	4	T	Z(lec)			4	K
3	ECEA00203	Artificial Intelligence and Computer Vision <b>GK</b>	2		2	1		K1EAC_W03 K1EAC_U03	75	210	7	7	4	T	Z(lec)			4	K
4	ECEA00204	Optoelectronics <b>GK</b>	2			2	1	K1EAC_W12 K1EAC_U12	75	210	7	7	4	T	Z(lec)			4	K
5	ECEA00205	Wireless systems <b>GK</b>	3		2			K1EAC_W06 K1EAC_U06	75	210	7	7	4	T	Z(lec)			4	K
Total			<b>11</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>2</b>	-	<b>225</b>	<b>630</b>	<b>21</b>	<b>21</b>	<b>12</b>	-	-	-	-	<b>12</b>	-

### Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>15</b>	<b>0</b>	<b>11</b>	<b>6</b>	<b>2</b>	<b>360</b>	<b>900</b>	<b>30</b>	<b>30</b>	<b>18</b>

## Semester 6

### Obligatory courses / groups of courses

### Number of ECTS points ...9.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00103	Electroacoustics <b>GK</b>	2		2			K1EAC_W12 K1EAC_U12	60	120	4	4	2	T	Z(lec)			2	K
2	ECEA00106	Team & preengineering project			3			K1EAC_K04	75	150	5	5	2,5	T	Z			5	K
Total			<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	-	<b>135</b>	<b>270</b>	<b>9</b>	<b>4</b>	<b>4,5</b>	-	-	-	-	<b>7</b>	-

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

**Optional courses / groups of courses (minimum ...225... hours in semester, ...15.... ECTS points; choice 3 of 5)**

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00206	Control Systems Engineering <b>GK</b>	2		3			KIEAC_W05 KIEAC_U05	75	210	7	7	4	T	E(lec)			4	K
2	ECEA00207	Embedded Systems <b>GK</b>	2		2	1		KIEAC_W07 KIEAC_U07	75	210	7	7	4	T	E(lec)			4	K
3	ECEA00208	Real Time Operating Systems <b>GK</b>	2			3		KIEAC_W03 KIEAC_U03	75	210	7	7	4	T	E(lec)			4	K
4	ECEA00209	Lasers, Fibers and Applications <b>GK</b>	2		2		1	KIEAC_W12 KIEAC_U12	75	210	7	7	4	T	E(lec)			4	K
5	ECEA00210	Communication systems and networks <b>GK</b>	2		2		1	KIEAC_W06 KIEAC_U06	75	210	7	7	4	T	E(lec)			4	K
Total			<b>10</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>2</b>	-	<b>225</b>	<b>630</b>	<b>21</b>	<b>21</b>	<b>12</b>	-	-	-	-	<b>12</b>	-

**Altogether in semester**

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>12</b>	<b>0</b>	<b>14</b>	<b>4</b>	<b>2</b>	<b>360</b>	<b>900</b>	<b>30</b>	<b>30</b>	<b>16,5</b>

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

## Semester 7

### Obligatory courses / groups of courses Number of ECTS points ...24.....

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA17105	Diploma seminar					2	K1EAC_U05	30	90	3	3	1	T	Z			2	K
2	ECEA17100	Final project			12			K1EAC_U09		360	12	12	3	T	Z			12	K
3	ECEA16001Q	Intership						K1EAC_U04		180	6	6	6	T	Z			6	K
4	PRZ000339W	Copyright	2					K1EAC_K02	30	60	2	2	1	T	Z	O			KO
5	ZMZ001048W	Entrepreneurship	2					K1EAC_K03	30	30	1	1	1	T	Z	O			KO
Total			<b>4</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>2</b>	-	<b>90</b>	<b>720</b>	<b>24</b>	<b>24</b>	<b>12</b>	-	-	-	-	<b>20</b>	-

### Optional courses / groups of courses (minimum ...90... hours in semester, ...6.... ECTS points; choice 2 of 9)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol <b>GK</b> )	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course/gr oup of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN <sup>5</sup> classes	BU <sup>1</sup> classes			University -wide <sup>4</sup>	Concerni ng scientific activities <sup>5</sup>	Practical <sup>6</sup>	Type <sup>7</sup>
1	ECEA00211	Electrotechnics <b>GK</b>	2		1			K1EAC_W04 K1EAC_U04	45	90	3	3	1,5	T	Z(lec)			1	K
2	ECEA00212	Medical Electronics <b>GK</b>	2				1	K1EAC_W04 K1EAC_U04	45	90	3	3	1,5	T	Z(lec)			1	K
3	ECEA00214	Electronics for Renewable Energy Sources <b>GK</b>	2				1	K1EAC_W02 K1EAC_U02	45	90	3	3	1,5	T	Z(lec)			1	K
4	ECEA00216	Virtualization and Cloud Computing <b>GK</b>	1		2			K1EAC_W03 K1EAC_U03	45	90	3	3	1,5	T	Z(lec)			1	K
5	ECEA00217	Machine learning <b>GK</b>	1				2	K1EAC_W03 K1EAC_U03	45	90	3	3	1,5	T	Z(lec)			1	K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

6	ECEA00218	Selected topics in Artificial Intelligence <b>GK</b>	2		1			K1EAC_W03 K1EAC_U03	45	90	3	3	1,5	T	Z(lec)			1	K
7	ECEA00220	Ultrasonic technology <b>GK</b>	1		2			K1EAC_W02 K1EAC_U02	45	90	3	3	1,5	T	Z(lec)			1	K
8	ECEA00221	Speech communication <b>GK</b>	1		2			K1EAC_W02 K1EAC_U02	45	90	3	3	1,5	T	Z(lec)			1	K
9	ECEA00223	Introduction to Radar Technology <b>GK</b>	2				1	K1EAC_W02 K1EAC_U02	45	90	3	3	1,5	T	Z(lec)			1	K
Total			<b>19</b>	<b>0</b>	<b>10</b>	<b>2</b>	<b>5</b>	-	<b>90</b>	<b>180</b>	<b>6</b>	<b>6</b>	<b>3</b>	-	-	-	-	<b>2</b>	-

## Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes <sup>5</sup>	Number of ECTS points for BU classes <sup>1</sup>
lec	cl	lab	pr	sem					
<b>23</b>	<b>0</b>	<b>22</b>	<b>2</b>	<b>7</b>	<b>90</b>	<b>180</b>	<b>30</b>	<b>30</b>	<b>15</b>

## 2. Set of examinations in semestral arrangement

Course / group of courses code	Names of courses / groups of courses ending with examination	Semester
MAT001653 MAT001654	1. Math - Analysis 1 2. Math - Algebra GK	1
MAT001510 FZP001127 ECEA17004	3. Math - Analysis 2 4. Physics 5. Object oriented programming	2
ECEA00016	6. Electronic_Components_and_Sensors	3
ECEA00022	7. Introduction_to_Microcontrollers	4

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

ECEA00009	8. Electronic_circuits GK	
ECEA19102	9. Microcontrollers	5
ECEA00206 ECEA00207 ECEA00208 ECEA00209 ECEA00210	10. Control Systems Engineering GK 11. Embedded Systems GK 12. Real Time Operating Systems GK 13. Lasers, Fibers and Applications GK 14. Communication systems and networks GK <i>(choice 3 of 5)</i>	6
ECEA17100	15. Final project	7

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

Semester	Allowable deficit of ECTS points after semester
1	11
2	11
3	11
4	11
5	11
6	0
7	0

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

## Opinion of student government legislative body

.....

Date

.....

Name and surname, signature of student representative

.....

Date

.....

Dean's signature

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

<sup>2</sup>Traditional – enter T, remote – enter Z

<sup>3</sup>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)

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

<sup>5</sup>DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned

<sup>6</sup>Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

<sup>7</sup>KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses