Kazimierz Pulaski University of Technology and Humanities

STUDY PLAN No. .....

Field of study: **Mechanical Engineering**

Field of specialisation: **1. Computer aided engineering**
2. Designing and manufacturing machines

2023/2024

Educational level: *first- cycle studies*
Qualification level (PRK): *6*
Education profile: *general academic*
Science discipline: *engineering mechanics - 100%*
Code ISCED: *0715*
Mode of study: *part-time study*
Professional title awarded to graduates: *engineer*

No.	Subject name	Examination after sem.	Credit after sem.	Hours: Sum – Didactic classes	Hours including: Form of didactic classes L	C	Lab	P	S	other IGK	ZBN	ECTS	I year, I semester L	C	Lab	P	S	ECTS	I year, II semester L	C	Lab	P	S	ECTS
	A. Group of basic science subjects																							
	A. Group of basic science subjects																							
1	Mathematics	2	1.2	90	30	60	0	0	0	10	200	12	15	30				6	15	30				6
2	Physics		2.3	56	24	16	16	0	0	10	134	8							24	16				5
3	Chemistry		1	20	8	0	12	0	0	5	75	4	8		12			4						
4	Engineering mechanics I	3	1,2,3	60	24	36	0	0	0	15	150	9	8	12				3	8	12				3
5	Strength of materials	3	3	56	16	20	20	0	0	10	109	7												
6	Fluid mechanics		3	32	8	12	12	0	0	5	63	4												
7	Fundamentals of technical thermodynamics	4	4	36	8	12	16	0	0	5	84	5												
	Razem grupa zajęć A			**350**	118	156	76	0	0	60	815	49	31	42	12	0	0	13	47	58	0	0	0	14
	B. Group of course subjects																							
	B 1. Group of obligatory course subject																							
1	Engineering graphics		1.2	60	16	0	44	0	0	15	100	7	8		20			3	8		24			4
2	Materials science		1.2	44	16	0	28	0	0	10	121	7	16		12			4			16			3
3	Theory of machines	1		16	16	0	0	0	0	2	32	2	16					2						
4	Environmental management and ecology		1	8	8	0	0	0	0	2	15	1	8					1						
5	Work safety and ergonomics		1	8	8	0	0	0	0	2	15	1	8					1						
6	Technologies of Industry 4.0		1	8	8	0	0	0	0	2	15	1	8					1						
7	Experiment theory		2	16	0	0	0	16	0	2	32	2										16		2
8	3D CAD systems		2	20	0	0	20	0	0	10	45	2.5									20			2.5
9	Manufacturing engineering		2.3	40	16	0	24	0	0	2	83	5							16		8			3
10	Metrology and measurement systems		3	28	16	0	12	0	0	3	57	3.5												
11	Electrical engineering and electronics	3	3	32	16	0	16	0	0	5	63	4												
12	Finite element method I		4	20	8	0	12	0	0	10	45	3												
13	Fundamentals of technical diagnostics		4	24	8	0	16	0	0	5	46	3												
14	Transmission system design		4	24	8	0	0	16	0	5	46	3												
15	Mechatronics and automatics		4	32	16	0	16	0	0	5	88	5												
16	Machine construction technology	4	4	28	16	0	12	0	0	5	59	3.5												
17	Fundamentals of machine design	5	4.5	92	32	12	0	48	0	18	190	12												
	B 2. Group of optional course subject																							
	Sum of group B_2			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Sum of group B			**500**	**208**	**12**	**200**	**80**	**0**	**103**	**1052**	**65.5**	**64**	**0**	**32**	**0**	**0**	**12**	**24**	**0**	**68**	**16**	**0**	**14.5**
	C. Field of specialisation module (choice 1 out of 2)																							
	C 1_A. Group of course subject in the field Computer Aided Engineering - obligatory																							
1	Programming and numerical methods		5	20	8	0	0	12	0	2	28	2												
2	Elective project		5	16	0	0	0	16	0	6	28	2												
3	Kinematics and dynamics of multibody systems		5	24	8	0	16	0	0	6	45	3												
4	Mechanics of structures	5	5	44	16	16	12	0	0	2	79	5												
5	Mechanical vibration	5	5	32	16	0	0	16	0	2	66	4												
6	Computer aided design		5.6	48	16	0	16	16	0	6	96	6												
7	Finite element method II		5.6	36	8	0	28	0	0	2	62	4												
8	CAE systems in mechanics		5.6	32	0	0	32	0	0	2	66	4												
9	3D printing		6	32	8	0	12	12	0	2	41	3												
10	Computer Analysis of Structures	6	6	24	8	0	0	16	0	8	43	3												
11	Numerical modeling of heat-flow problems	6	6	24	8	0	16	0	0	5	46	3												
12	Industrial Controllers PLC		6	20	8	0	12	0	0	2	28	2												
13	Senior project		6	16	0	0	0	0	16	6	28	2												
14	Optimization of construction	7	7	24	8	0	0	16	0	2	49	3												
15	Embedded systems		7	24	8	0	16	0	0	8	43	3												
16	Numerical modeling of fluid - structure interaction		7	24	8	0	0	16	0	8	43	3												
17	Application of CAD/CAE systems		7	16	0	0	0	16	0	6	28	2												
	Sum of group C_{1A}			**456**	**128**	**16**	**160**	**136**	**16**	**75**	**819**	**54**	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**
	C_{1B}. Group of course subject in the field Computer Aided Engineering - (choice 3 out of 5)																							
1	ERP systems		6	60	24	0	0	36	0	6	84	6												
2	System engineering		6	0	0	0	0	0	0			0												
3	Industrial robots		6	0	0	0	0	0	0			0												
4	Measurements and analysis of signals		6	0	0	0	0	0	0			0												
5	Reverse engineering		6	0	0	0	0	0	0			0												
	Sum of group C_{1B}			**60**	**24**	**0**	**0**	**36**	**0**	**6**	**84**	**6**	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**
	Sum of group C_1			**516**	**152**	**16**	**160**	**172**	**16**	**81**	**903**	**60**	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**
	C 2A. Group of course subject in the field Designing and manufacturing machines - obligatory																							
1	Special technologies	5	5	32	16	0	0	16	0	4	64	4												
2	Fundamentals of nanotechnology		5	20	8	0	12	0	0	2	28	2												
3	Dimensional analysis of the construction		5	20	8	12	0	0	0	2	28	2												
4	CNC machine tools	5	5	24	8	0	16	0	0	8	43	3												
5	Machining by cutting and cutting tools		5	20	8	0	12	0	0	2	28	2												
6	Measurement systems and uncertainty estimation		5	20	8	12	0	0	0	2	28	2												
7	Advanced solid modelling in CAD systems		5	16	0	0	16	0	0	6	28	2												

No.	Subject name	I year, II semester, form of didactic classes L	C	Lab	P	S	ECTS	III semester, form of didactic classes L	C	Lab	P	S	ECTS	IV semester, form of didactic classes L	C	Lab	P	S	ECTS
	A. Group of basic science subjects																		
	A. Group of basic science subjects																		
1	Mathematics																		
2	Physics									16			3						
3	Chemistry																		
4	Engineering mechanics I	8	12				3	8	12				3						
5	Strength of materials							16	20	20			7						
6	Fluid mechanics							8	12	12			4						
7	Fundamentals of technical thermodynamics													8	12	16			5
	Razem grupa zajęć A	32	44	48	0	0	17	8	12	16	0	0	5	0	0	0	0	0	0
	B. Group of course subjects																		
	B 1. Group of obligatory course subject																		
1	Engineering graphics																		
2	Materials science																		
3	Theory of machines																		
4	Environmental management and ecology																		
5	Work safety and ergonomics																		
6	Technologies of Industry 4.0																		
7	Experiment theory																		
8	3D CAD systems																		
9	Manufacturing engineering																		
10	Metrology and measurement systems	16		12			3.5												
11	Electrical engineering and electronics	16		16			4												
12	Finite element method I													8		12			3
13	Fundamentals of technical diagnostics													8		16			3
14	Transmission system design													8			16		3
15	Mechatronics and automatics													16		16			5
16	Machine construction technology													16		12			3.5
17	Fundamentals of machine design													16	12		24		6
	B 2. Group of optional course subject																		
	Sum of group B_2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Sum of group B	**32**	**0**	**44**	**0**	**0**	**9.5**	**72**	**12**	**56**	**40**	**0**	**23.5**	**16**	**0**	**0**	**24**	**0**	**6**
	C. Field of specialisation module (choice 1 out of 2)																		
	C 1_A. Group of course subject in the field Computer Aided Engineering - obligatory																		
1	Programming and numerical methods													8			12		2
2	Elective project																16		2
3	Kinematics and dynamics of multibody systems													8		16			3
4	Mechanics of structures													16	16	12			5
5	Mechanical vibration													16			16		4
6	Computer aided design													8		16			3
7	Finite element method II													8		12			2
8	CAE systems in mechanics															16			2
9	3D printing																		
10	Computer Analysis of Structures																		
11	Numerical modeling of heat-flow problems																		
12	Industrial Controllers PLC																		
13	Senior project																		
14	Optimization of construction																		
15	Embedded systems																		
16	Numerical modeling of fluid - structure interaction																		
17	Application of CAD/CAE systems																		
	Sum of group C_{1A}	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**	**64**	**16**	**72**	**44**	**0**	**23**
	C_{1B}. Group of course subject in the field Computer Aided Engineering - (choice 3 out of 5)																		
1	ERP systems																		
2	System engineering																		
3	Industrial robots																		
4	Measurements and analysis of signals																		
5	Reverse engineering																		
	Sum of group C_{1B}	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Sum of group C_1	**0**	**0**			**0**	**0**	**0**	**0**			**0**	**0**	**64**	**16**	**72**	**44**	**0**	**23**
	C 2A. Group of course subject in the field Designing and manufacturing machines - obligatory																		
1	Special technologies													16			16		4
2	Fundamentals of nanotechnology													8		12			2
3	Dimensional analysis of the construction													8	12				2
4	CNC machine tools													8		16			3
5	Machining by cutting and cutting tools													8		12			2
6	Measurement systems and uncertainty estimation													8	12				2
7	Advanced solid modelling in CAD systems															16			2

No.	Subject name	III year, V semester, form of didactic classes L	C	Lab	P	S	ECTS	III year, VI semester, form of didactic classes L	C	Lab	P	S	ECTS	IV year, VII semester, form of didactic classes L	C	Lab	P	S	ECTS
	A. Group of basic science subjects																		
	A. Group of basic science subjects																		
1	Mathematics																		
2	Physics																		
3	Chemistry																		
4	Engineering mechanics I																		
5	Strength of materials																		
6	Fluid mechanics																		
7	Fundamentals of technical thermodynamics																		
	Razem grupa zajęć A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B. Group of course subjects																		
	B 1. Group of obligatory course subject																		
1	Engineering graphics																		
2	Materials science																		
3	Theory of machines																		
4	Environmental management and ecology																		
5	Work safety and ergonomics																		
6	Technologies of Industry 4.0																		
7	Experiment theory																		
8	3D CAD systems																		
9	Manufacturing engineering																		
10	Metrology and measurement systems																		
11	Electrical engineering and electronics																		
12	Finite element method I																		
13	Fundamentals of technical diagnostics																		
14	Transmission system design																		
15	Mechatronics and automatics																		
16	Machine construction technology																		
17	Fundamentals of machine design	16			24		6												
	B 2. Group of optional course subject																		
	Sum of group B_2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Sum of group B	**16**	**0**	**0**	**24**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	C. Field of specialisation module (choice 1 out of 2)																		
	C 1_A. Group of course subject in the field Computer Aided Engineering - obligatory																		
1	Programming and numerical methods																		
2	Elective project																		
3	Kinematics and dynamics of multibody systems																		
4	Mechanics of structures																		
5	Mechanical vibration																		
6	Computer aided design																		
7	Finite element method II																		
8	CAE systems in mechanics																		
9	3D printing																		
10	Computer Analysis of Structures																		
11	Numerical modeling of heat-flow problems																		
12	Industrial Controllers PLC																		
13	Senior project																		
14	Optimization of construction																		
15	Embedded systems																		
16	Numerical modeling of fluid - structure interaction																		
17	Application of CAD/CAE systems																		
	Sum of group C_{1A}	**0**	**0**	**0**	**0**	**0**	**0**	**40**	**0**	**72**	**44**	**16**	**20**	**24**	**0**	**16**	**48**	**0**	**11**
	C_{1B}. Group of course subject in the field Computer Aided Engineering - (choice 3 out of 5)																		
1	ERP systems							24			36		6						
2	System engineering																		
3	Industrial robots																		
4	Measurements and analysis of signals																		
5	Reverse engineering																		
	Sum of group C_{1B}	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**0**	**0**	**36**	**0**	**6**	**0**	**0**			**0**	**0**
	Sum of group C_1	**0**	**0**	**0**	**0**	**0**	**0**	**64**	**0**	**72**	**80**	**16**	**26**	**24**	**0**	**16**	**48**	**0**	**11**
	C 2A. Group of course subject in the field Designing and manufacturing machines - obligatory																		
1	Special technologies																		
2	Fundamentals of nanotechnology																		
3	Dimensional analysis of the construction																		
4	CNC machine tools																		
5	Machining by cutting and cutting tools																		
6	Measurement systems and uncertainty estimation																		
7	Advanced solid modelling in CAD systems																		

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