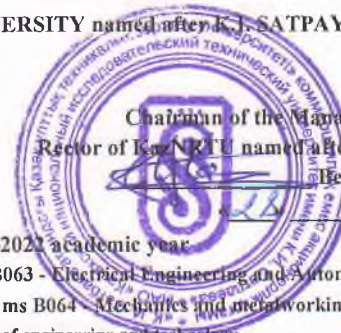




**SATBAYEV
UNIVERSITY**



Approved by:
Chairman of the Management Board-
Rector of KazNRTU named after K.I.Satpayev
Begenbayev M.M.
2021.06.20

MODULAR EDUCATIONAL PROGRAM for recruitment for the 2021-2022 academic year

Educational program 6B07113 - Robotics and Mechatronics, Group of educational programs B063 - Electrical Engineering and Automation

Educational program 6B07111 - Robotics and Mechatronics, Group of educational programs B064 - Mechanics and mechatronics

Full-time study

Study duration : 4 years

Academic degree: bachelor of engineering and technology

Year of study	Code	Name of discipline	well	semestr	Cycle	Total amount in credits	Total hours	classroom volume of lc/lab/pr	form of control	competencies
Language Training module										
Required component										
1	LNG108	English	1	G	5	150	0/0/3	105	E	
1	LNG108	English	2	G	5	150	0/0/3	105	E	
1	LNG104	Academic Kazakh (Russian) language	1	G	5	150	0/0/3	105	E	
1	LNG104	Academic Kazakh (Russian) language	2	G	5	150	0/0/3	105	E	
Module of social disciplines										
Required component										
1	KFK101	Physical education I	1	G	2	60	0/0/2	30	E	
1	KFK102	Physical education II	2	G	2	60	0/0/2	30	E	
2	KFK103	Physical education III	3	G	2	60	0/0/2	30	E	
2	KFK104	Physical education IV	4	G	2	60	0/0/2	30	E	
1	HUM100	Modern history of Kazakhstan	1	G	5	150	1/0/2	105	E	
2	HUM132	Philosophy	4	G	5	150	1/0/2	105	E	
2	CHE452	Ecology and sustainable development	5	G	2	60	1/0/0	45	E	
2	CHE451	Life safety	5	G	2	60	1/0/0	45	E	
2	MNG487	Fundamentals of Entrepreneurship, Leadership and Anti-corruption culture	6	G	3	90	1/0/1	60	E	
Socio-political knowledge module										
Required component										
1	HUM129	Culturology	G	2	60	1/0/0	45	E		
2	HUM122	Psychology	G	2	60	1/0/0	45	E		
2	HUM127	Sociology	G	2	60	1/0/0	45	E		
1	HUM128	Political science	3	G	8	240	4/0/0	180	E	
Module of physical and mathematical training, computer science and chemistry										
University component										
1	MAT101	Mathematics I	1	B	5	150	1/0/2	105	E	
1	PHY111	Physics I	1	B	5	150	1/1/1	105	E	
1	MAT102	Mathematics II	2	B	5	150	1/0/2	105	E	
1	PHY112	Physics II	2	B	5	150	1/1/1	105	E	
2	MAT103	Mathematics III	3	B	5	150	1/0/2	105	E	
2	CSE677	Information and communication technology	3	G	5	150	2/1/0	105	E	
Module of basic general technical training										
University component										
1	GEN177	Engineering and computer graphics	1	B	5	150	1/0/2	105	E	
1	ROB428	Robotics and mechatronics	2	B	5	150	2/0/1	105	E	
2	ROB410	Fundamentals of electromechanics and electronics	3	B	5	150	1/1/1	105	E	
2	ROB154	Electronics	4	B	5	150	1/1/1	105	E	
Professional activity module										
University component										
2	ROB503	Mechanics of robots	3	B	5	150	2/0/1	105	E	
2	ROB504	High-level Programming	4	B	5	150	2/1/0	105	E	
3	ROB506	Integral and microprocessor circuit design	5	S	5	150	2/1/0	120	E	
4	ROB528	Programming for engineers with MATLAB	7	S	5	150	2/1/0	120	E	
Component of choice										
2	ROB185	Manufacturing robototechnics	3	B	5	150	2/0/1	105	E	
2	ROB523	Biomorphic and anthropomorphic robotics					2/0/1			
2	ROB421	Biotechnical systems	4	B	5	150	2/0/1	105	E	
2	ROB429	Mechanics of manipulators					1/0/1			
3	ROB121	Optoelectronic technology	5	B	5	150	1/0/2	105	E	
3	ROB507	Fundamentals of biomechanics					2/1/0			
3	ROB195	Programming for microcontrollers	5	B	5	150	2/0/1	105	E	
3	ROB411	Embedded system programming					1/1/1			
3	ROB515	Basics of automation	5	B	5	150	2/1/0	105	E	
3	ROB514	Automation					2/0/1			
3	ROB510	Fundamentals of information and measuring technologies	5	B	5	150	2/1/0	105	E	
3	ROB509	The physical basis for obtaining information					2/0/1			

3	ROB511	Autonomous mobile robots	5	B	3	90	2/0/1	60	E
3	ROB534	Mechanics of controlled machines	5	B	3	90	2/0/1	60	E
3	ROB508	Power Supplies	6	B	5	150	1/1/1	105	E
3	ROB145	Accuracy of measuring instruments	6	B	5	150	2/1/0	105	E
3	ROB124	Microprocessor control devices for robots	6	B	5	150	2/1/0	105	E
3	ROB519	Microcontroller control systems	6	B	5	150	2/1/0	105	E
3	ROB 125	Reliability and quality of measuring instruments	6	B	5	150	2/1/0	105	E
3	ROB 153	Fundamentals of Engineering Creativity	6	B	5	150	2/0/1	105	E
3	ROB171	Robot drives	6	B	5	150	2/1/0	105	E
3	ROB 526	Hydropneumatic drives of robots	6	B	5	150	2/0/1	105	E
3	ROB131	Standardization and technical measurements	6	P	5	150	1/1/1	105	E
3	ROB189	Test and Measurement	6	P	5	150	2/1/0	105	E
3	ROB139	Sensor systems in robotics	6	P	3	90	2/1/0	60	E
3	ROB138	Sensor electronics, sensors	6	P	3	90	2/1/0	60	E
4	ROB190	Vibration of Mechanical Systems	7	P	5	150	2/0/1	105	E
4	ROB413	Biomechanic	7	P	5	150	2/0/1	105	E
4	ROB119	Computer simulation of mechatronic and robotic systems	7	P	5	150	2/1/0	105	E
4	ROB141	Statistical methods in engineering research	7	P	5	150	2/0/1	105	E
4	ROB168	Modeling of measuring systems	7	P	5	150	2/1/0	105	E
4	ROB181	Embedded systems in robotics	7	P	5	150	2/1/0	105	E
4	ROB162	Mechatronic systems software	7	P	5	150	2/1/0	105	E
4	ROB175	Software robots	7	P	5	150	2/1/0	105	E
4	ROB518	Modeling of dynamic systems	7	P	3	90	2/1/0	60	E
4	ROB535	Engineering thermodynamics and electrodynamics	7	P	3	90	2/0/1	60	E
4	ROB148	Robot control	8	P	5	150	2/1/0	105	E
4	ROB416	Control and dynamic systems	8	P	5	150	2/0/1	105	E
4	ROB144	Machine learning and neural networks	8	P	5	150	2/1/0	105	E
4	ROB126	Fuzzy logic and neural networks	8	P	5	150	2/1/0	105	E
4	ROB166	Designing robots	8	P	5	150	2/1/0	105	E
4	ROB109	Design of electronic circuits	8	P	5	150	2/1/0	105	E
Practice-oriented module									
Required component									
1	AAP164	Training Practice	2		2				
2	AAP143	Industrial internship I	4		2				
3	AAP163	Industrial internship II	6		4				
Module of final certification									
Required component									
4	ECA003	Preparation and writing of the thesis (project)	8	FA	6				
4	ECA103	Graduate thesis (project) defense	8	FA	6				
Module of additional types of training									
Component of choice									
1		Sports club sectional	5-7		0				
2-3	AAP500	Military Training	3-6		0				

Number of credits on elective subjects for the entire period of study				
Cycles of disciplines	Credits			
	mandatory	elective	practices	in total
The cycle of general disciplines (G)	51	7	0	58
The cycle of basic disciplines (B)	55	53	4	112
The cycle of profiling disciplines (P)	10	46	4	60
<i>Total for theoretical training:</i>	116	106	8	230
Final certification (FC)	12	0	12	12
Total:	128	106	20	242

Decision of the Academic Council KazNRTU named after K.I. Satpayev. Minutes 3, dated "25" 06 2021.

Decision of the Academic Council of the Institute of Industrial Automation and Digitalization. Minutes 12, dated "04" 06 2021.

Vice-rector for academic affairs

B.A. Zhautikov

Director of the Institute of Automation and Information Technologies

R.K. Uskenbayeva

Head of department "Robotics and engineering discipline of automation"

K.A. Ozhikenov

Representative of Specialty council



A.K. Dzhumagulov