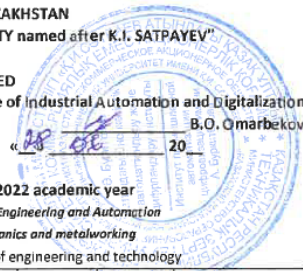




APPROVED  
 Director of Institute of Industrial Automation and Digitalization  
 B.O. Omarbekov



**ELECTIVE DISCIPLINES OF THE 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 metalworking  
 Full-time study Study duration : 4 years Academic degree: bachelor of engineering and technology

Year of study	Elective code	Discipline code	Name of discipline	Cycle	Credits	lec/ab/pr/C SI	pre-requisites	
2	2201	ROB185	Manufacturing robototechnics	B	5	2/0/1		
		ROB523	Biomorphic and anthropomorphic robotic					
		ROB511	Autonomous mobile robots					
	<b>Total:</b>							
	<b>3rd semester (autumn 2022)</b>							
	2202	ROB421	Biotechnical systems	B	5	2/0/1		
ROB429		Mechanics of manipulators						
<b>Total:</b>								
<b>4th semester (spring 2023)</b>								
3	3203	ROB121	Optoelectronic technology	B	5	2/1/0/		
		ROB507	Fundamentals of biomechanics					
		ROB195	Programming for microcontrollers					
	3204	ROB411	Embedded system programming	B	5	1/1/1/		
		ROB515	Basics of automation					
	3205	ROB514	Automation	B	5	2/1/0/		
		ROB510	Fundamentals of information and measuring technologies					
	3206	ROB509	The physical basis for obtaining information	B	5	2/1/0/		
		ROB511	Autonomous mobile robots					
	3207	ROB534	Mechanics of controlled machines	B	5	2/0/1		
		<b>Total:</b>						
	<b>5th semester (autumn 2023)</b>							
	3	3208	ROB508	Power Supplies	B	5	1/1/1/	
			ROB145	Accuracy of measuring instruments				
			ROB 519	Microcontroller control systems				
		3209	ROB 124	Microprocessor control devices for robots	B	5	2/1/0/	
			ROB 125	Reliability and quality of measuring instruments				
		3210	ROB 153	Fundamentals of Engineering Creativity	B	5	2/0/1	
			ROB171	Robot drives				
		3211	ROB 526	Hydropneumatic drives of robots	B	5	2/1/0/	
			ROB131	Standardization and technical measurements				
3301		ROB189	Test and Measurement	S	5	2/1/0/		
		ROB139	Sensor systems in robotics					
3302		ROB138	Sensor electronics, sensors	S	5	2/1/0/		
		<b>Total:</b>						
<b>6th semester (spring 2024)</b>								
4		4303	ROB190	Vibration of Mechanical Systems	S	5	2/0/1	
	ROB413		Biomechanic					
	ROB119		Computer simulation of mechatronic and robotic systems					
	4304	ROB141	Statistical methods in engineering research	S	5	2/1/0/		
		ROB168	Modeling of measuring systems					
	4305	ROB181	Embedded systems in robotics	S	5	2/1/0/		
		ROB162	Mechatronic systems software					
	4306	ROB175	Software robots	S	5	2/1/0/		
		ROB518	Modeling of dynamic systems					
	4307	ROB535	Engineering thermodynamics and electrodynamics	S	5	2/1/0/		
		<b>Total:</b>						
<b>7th semester (autumn 2024)</b>								
4	4308	ROB148	Robot control			2/1/0/		
		ROB416	Control and dynamic systems					
	4309	ROB144	Machine learning and neural networks			2/1/0/		
		ROB126	Fuzzy logic and neural networks					
	4310	ROB166	Designing robots			2/1/0/		
		ROB109	Design of electronic circuits					
	<b>Total:</b>							
<b>8th semester (spring 2025)</b>								
<b>Total:</b>								

Number of credits on elective subjects for the entire period of study	
Cycles of disciplines	Credits
The cycle of general disciplines (G)	7
The cycle of basic disciplines (B)	53
The cycle of profiling disciplines (P)	46
<b>TOTAL:</b>	<b>106</b>

Decision of the Academic Council of the Institute of Industrial Engineering. Minutes # 12, dated "07 06 2024"

Head of department "Robotics and Hardware Automation"

K.A. Ozhikenov