MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
K. I. SATPAYEV KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY К.И.САТПАЕВА

SATBAYEV UNIVERSITY

APPROVED
Rector of Satbayev University
M.M. Begentayev
"18" 06 2021

CURRICULUM OF EDUCATIONAL PROGRAM for 2021-2022 academic year admission

Educational program 6B07101 - "Power Engineering", Group of educational programs "B62 Electrical and Power Engineering"

Full-time study | Study duration : 4 years | Academic degree: bachelor of engineering and technology

Year of study	Code	Name of discipline	Cycle	Credits	Total hours	lec/lab/pr	IWS (including IWSWT), in hours	Code transfer of funds	pre-requisites
		1 semester (autumn 2021)							
1	LNG108	English	G	5	150	0/0/3	105		The diagnostic
	LNG104	Kazakh (Russian) language	G	5	150	0/0/3	105		The diagnostic
	HUM100	Modern history of Kazakhstan (state exam)	G	5	150	1/0/2	105		
	PHY111	Physics I	B	5	150	1/1/1	90		
	MAT101	Mathematics I	B	5	150	1/0/2	105		
	ERG104	Introduction to specialty	B	5	150	2/0/1	105		
	HUM128	Political science	G	2	60	1/0/0	45		no
	KFK101	Physical education I	G	2	60	0/0/2	30		
		Total:		34					
		3 semester (autumn 2022)							
2	CHE452	Ecology and sustainable development	G	2	60	1/0/0	45		
	HUM127	Sociology	G	2	60	1/0/0	45		
	CSE677	Information and Communication technology (eng)	G	5	150	2/1/0	90		
	MAT103	Mathematics III	B	5	150	1/0/2	105		MAT102
	ELC542	Theoretical Foundations of Electrical Engineering I	B	5	150	2/1/0	90		
	ERG519	Theoretical fundamentals of heat engineering	B	5	150	2/0/1	105		
	ERG528	Electrotechnical and thermotechnical measurements	B	5	150	2/1/0	90		
	KFK103	Physical education III	G	2	60	0/0/2	30		KFK102
		Total:		31					
		5 semester (autumn 2023)							
3	ERG504	Laboratory workshop on modern industrial technologies in the electric power industry I	S	5	150	0/3/0	60		
	ERG153	Engineering Thermodynamics	B	5	150	2/0/1	105		PHY112
	3215	Elective	B	5	150				
	NSE143	Industrial economics	B	5	150	2/0/1	105		
	ERG527	Electrical machines	S	5	150	2/1/0	90		ELC543
		Total:		25					
		7 semester (autumn 2024)							
4	ERG124	Basics of electrical safety	S	5	150	1/1/1	90		
	4306	Elective	S	5	150				
	4307	Elective	S	5	150				
	4308	Elective	S	5	150				
	4309	Elective	S	5	150				
	4310	Elective	S	5	150				
		Total:		30					

Code	Name of discipline	Cycle	Credits	Total hours	lec/lab/pr	IWS (including IWSWT), in hours	Code transfer of funds	pre-requisites
	2 semester (spring 2022)							
LNG108	English	G	5	150	0/0/3	105		
LNG107	Kazakh (Russian) language	G	5	150	0/0/3	105		
PHY112	Physics II	B	5	150	1/1/1	90		PHY111
MAT102	Mathematics II	B	5	150	1/0/2	105		MAT101
ERG158	Reading electrical circuits	B	5	150	1/0/2	105		
KFK102	Physical education II	G	2	60	0/0/2	30		KFK101
HUM129	Culturology	G	2	60	1/0/0	45		
ERG176	Electrical and technical material scince	B	5	150	2/0/1	105		
	Total:		34					
	4 semester (spring 2023)							
MNG487	Fundamentals of Entrepreneurship, Leadership and Anti-corruption culture	G	3	90	1/0/1	60		
HUM122	Psychology	G	2	60	1/0/0	45		
HUM124	Philosophy	G	5	150	1/0/2	105		
CHE451	Life safety	G	2	60	1/0/0	45		
ELC543	Theoretical Foundations of Electrical Engineering II	B	5	150	2/1/0	90		ELC519
ERG521	Heat and mass transfer equipment in heat power engineering	B	5	150	2/0/1	105		PHY112
ERG509	Industrial electronics	S	5	150	2/1/0	90		
KFK104	Physical education IV	G	2	60	0/0/2	30		KFK103
	Total:		29					
	6 semester (spring 2024)							
ERG532	Electrical apparatus	B	5	150	2/1/0	90		
3218	Elective	B	5	150				
3219	Elective	B	5	150				
3220	Elective	B	5	150				
ERG555	Laboratory workshop on modern industrial technologies in the electric power industry II	S	5	150	0/3/0	60		ERG504
ERG530	Power supply of enterprises	B	5	150	2/1/0	90		
	Total:			30				
	8 semester (spring 2025)							
ERG159	Environmental Issues in Heat Power Engineering	B	3	90	1/0/1	60		
ERG535	Industrial Energy Audit and Energy-Saving	S	3	90	1/0/1	60		
ERG534	Renewable energy	S	3	90	1/0/1	60		
ECA001	Graduate thesis (project) preparation	FA	6					
ECA103	Graduate thesis (project) defense	FA	6					
	Total:		21					

Year of study	Code	Name of discipline	Cycle	Credits	Semester
		Obligatory education with P/NP assessment			
1	AAP101	Training Practice	B	2	2
2	AAP109	Industrial internship I	B	2	4
3	AAP158	Industrial internship II	S	4	6
		Other education			
2-3	AAP500	Military training	B	0	3-6
1		Sports club sectional	O	0	3-7

Total number of credits

Cycle of disciplines	Credits: compul-sary	elective		total
Cycle of general disciplines (G)	51	7		58
Cycle of basic disciplines (B)	92	20		112
Cycle of special disciplines (S)	35	25		60
Total of theoretical study :	178	52		230
Final attestation (FA)	12	0		12
Total:	190	52		242

The decision of the Academic Council of KazNRTU named after K. Satpayev. Protocol # 3, dated "25" 06 2021.

The decision of the Educational and Methodological Council of KazNRTU named after K. Satpayev. Protocol # 6, dated "14." 06. 2021

The decision of the Academic Council of the Institute of Industrial Automation and Digitalization. Protocol Protocol # 12, dated "17" 06 2021.

Vice-Rector for academic work — B. A. Zhautikov

Director of the Institute of Industrial Automation and Digitalization — B.O.Omarbekov

Head of department "Power Engineering" — E.A.Sarsenbaev

Representative of Specialty council — G. E. Abdykalykov

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SATBAYEV UNIVERSITY

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APPROVED
Director of the Institute
of Industrial Automation and Digitalization
_____ B.O.Omarbekov
«28» 06 2021 y.

ELECTIVE DISCIPLINES OF THE EDUCATIONAL PROGRAM for recruitment for the 2021-2022 academic year

Educational program 6B07101 - "Power Engineering"
Group of educational programs - B62 Electrical and Power Engineering

Full-time study | Study duration : 4 years | Academic degree: bachelor of engineering and technology

Year of study	Code of elective	Code of discipline	Name of discipline	Cycle	Credits	lec/lab/pr /ISW	Prerequisites
			5 semester (autumn 2023)				
	3215	ERG529	Power and electrotechnical equimpment	B	5	2/0/1/2	ELC542
		ERG112	Boiler Plants and Steam Generators				ERG519
			Total:		**5**		
			6 semester (spring 2024)				
3	3218	ERG178	Electric power networks and systems	B	5	1/1/1/2	
		ERG525	Electrical part of power stations				
		ERG425	Hydrogasodynamics of media in heat power plants			2/0/1/2	
	3219	ERG127	Transition processes in energy systems	B	5	2/0/1/2	ELC543
		ERG533	Theoretical Foundations of Fuel Combustion and Furnace Plants				
	3220	ERG500	Automated electric drive	B	5	1/1/1/2	
		ERG507	Blowers and Heat Engines			2/0/1/2	
			Total:		**15**		
			7 trimester (autumn 2024)				
4	4306	ERG524	Main Machinery Operation of Heat Power Plant	S	5	2/0/1/2	ERG519
		ERG506	Modeling in power systems			1/2/0/2	
	4307	ERG508	Light technology and lighting	S	5	2/0/1/2	
		ERG520	Thermal machines and GTU				
	4308	ERG511	Calculation and projecting of power supply systems	S	5	2/0/1/2	ERG530
		ERG517	Calculation and projecting of electrical power networks and systems				ERG178
		ERG516	Calculation and Design of Heat Exchange Equipment				ERG521
		ERG138	Calculation and projecting of power stations and substations				ERG525
		ERG510	Calculation and projecting of systems of automated electrical drive				ERG500
	4309	ERG142	Relay protection of power systems	S	5	1/1/1/2	
		ERG126	Steam-Gas and Gas-Turbine Facilities for Heat and Nuclear Power Plants			2/0/1/2	
	4310	ERG502	Engineering design of electrical machines in the power industry	S	5	2/1/0/2	ERG527
		ERG111	Sources and Systems of Heat Supply of Plant Facilities and Housing				
			Total:		**25**		

The number of credits in elective disciplines for the entire period of study	
Cycles of disciplines	**Loans**
The cycle of general education (G)	0
The cycle of basic disciplines (B)	20
The cycle of special disciplines (S)	25
Total:	45

Decision of the Academic Council of the Institute of Industrial Automation and Digitalization. Minutes №12, dated "17" 06 2021.

Head of department "Power Engineering" **E.A.Sarsenbaev**