KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY named after K.I.SATBAYEV

SATBAYEV UNIVERSITY

APPROVED
Chairman of the Management Board-
Rector of KazNRTU named after K.Satbayev
M.M.Begentayev
2023 y.

CURRICULUM

of Educational Program on enrollment for 2023-2024 academic year

Educational program 6B05206 - "Engineering ecology"

Group of educational programs B051 - "Environment"

Form of study: full-time | Duration of study: 4 years | Academic degree: Bachelor of natural sciences

Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	Classroom amount lec/lab/pr	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters							
								I course		II course		III course		IV course	
								1	2	3	4	5	6	7	8
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)															
M-1. Module of language training															
LNG 108	English language	GED, RC	10	300	0/0/6	210	E	5	5						
LNG 104	Kazakh (Russian) language	GED, RC	10	300	0/0/6	210	E	5	5						
M-2. Module of physical training															
KFK 101-104	Physical Culture	GED, RC	8	240	0/0/8	120	Difcredit	2	2	2	2				
M-3. Module of information technology															
CSE 677	Information and communication technologies	GED, RC	5	150	2/1/0	105	E				5				
M-4. Module of socio-cultural development															
HUM137	History of Kazakhstan	GED, RC	5	150	1/0/2	105	SE		5						
HUM 132	Philosophy	GED, RC	5	150	1/0/2	105	E				5				
HUM 120	Socio-political knowledge module (sociology, politology)	GED, RC	3	90	1/0/1	60	E				3				
HUM 134	Socio-political knowledge module (culturology, psychology)		5	150	2/0/1	150	E			5					
M-5. Module of anti-corruption culture, ecology and life safety base															
1201	Elective	GED, CCH	5	150		150	E			5					
CYCLE OF BASIC DISCIPLINES (BD)															
M-6. Module of physical and mathematical training															
MAT 101	Mathematics I	BD, UC	5	150	1/0/2	105	E	5							
PHY468	Physics	BD, UC	5	150	1/1/1	105	E	5							
MAT 102	Mathematics II	BD, UC	5	150	1/0/2	105	E		5						
M-7. Module of basic training															
GEN429	Engineering and computer graphics	BD, UC	5	150	1/0/2	105	E	5							
M-8. Module of Basic Chemical Training															
CHE815	General Chemistry	BD, UC	4	120	2/1/0*	75	E	4							
CHE193	Inorganic Chemistr	BD, UC	5	150	2/1/0*	105	E		5						
CBI108	Analytical Chemistry	BD, UC	5	150	1/1/1	105	E			5					
CHE582	Organic Chemistry	BD, UC	5	150	2/1/0*	105	E				5				
CHE127	Physical chemistry	BD, UC	5	150	1/1/1	105	E				5				
CHE837	General chemical technology	BD, UC	6	180	2/1/1	120	E				6				
2201	Elective	BD, CCH	5	150		105	E			5					
M-9. Module of General environmental training															
CHE850	Introduction to the specialty (engineering ecology)	BD, UC	5	150	1/0/2	105	E			5					
HPP130	Research in Environment and Natural Resources	BD, UC	5	150	1/0/2	105	E					5			
CHE601	Geoecology	BD, UC	5	150	2/0/1	105	E					5			
CHE438	Environmental assessment and expertise	BD, UC	5	150	2/0/1	105	E					5			
CHE647	Ecology and environmental economics	BD, UC	5	150	2/0/1	105	E					5			
2301	Elective	BD, CCH	5	150		105	E					5			
2302	Elective	BD, CCH	5	150		105	E					5			
2303	Elective	BD, CCH	5	150		105	E						5		
2304	Elective	BD, CCH	5	150		105	E						5		
2305	Elective	BD, CCH	5	150		105	E							5	
CHE644	Environmental monitoring	BD, UC	5	150	2/0/1	105	E						5		
CHE437	Environmental legislation	BD, UC	5	150	2/0/1	105	E							5	
CIV784	Educational practice	BD, UC	2						2						
CYCLE OF PROFILE DISCIPLINES (PD)															
M-10. Module of professional activity															
CHE858	Global ecology and biodiversity	PD, UC	4	120	2/0/1	75	Э						4		
CHE859	Fundamentals of Radiation Ecology	PD, UC	4	120	2/0/1	75	Э						4		

3301	Elective	PD, CCH	4	120		75	Э						4		
HPP131	Restoration technologies for damaged ecosystems	PD, UC	5	150	2/0/1	105	Э							5	
CHE860	Best available technology in various industries	PD, UC	6	180	2/0/2	120	Э							6	
3401	Elective	PD, CCH	6	180		120	Э							6	
3402	Elective	PD, CCH	5	150		105	Э							5	
3403	Elective	PD, CCH	6	180		120	Э							6	
3404	Elective	PD, CCH	5	150		105	Э								5
3405	Elective	PD, CCH	5	150		105	Э								5
3406	Elective	PD, CCH	5	150		105	Э								5
CIV785	Production practice I	PD, UC	2								2				
CIV786	Production practice II	PD, UC	3										3		
M-11. Module of final attestation															
ECA108	Defense of the thesis (project)	FA	8												8
M-12. Module of additional types of training															
AAP500	Military affairs	ATT	0												
Total based on UNIVERSITY:								31	29	27	33	30	30	33	27
								60		60		60		60	

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
		required component (RC)	university component (UC)	component of choice (CCH)	Total
GED	Cycle of general education disciplines	51		5	56
BD	Cycle of basic disciplines		87	30	117
PD	Cycle of profile disciplines		23	36	59
	Total for theoretical training:	*51*	*110*	*71*	*232*
FA	final attestation	8			8
	TOTAL:	59	110	71	240

Decision of the Academic Council of KazNRTU named after K.Satbayev. Protocol № 5 24 november 2022 y.

Decision of the Educational and Methodological Council of KazNRTU named after K.Satbayev. Protocol № 3 17 november 2022 y.

Decision of the Academic Council of the Mining and Metallurgical Institute. Protocol № 3 от "15" 11 2022 y.

Vice-Rector for Academic Affairs — B. Zhautikov

Director of the Mining and Metallurgical Institute — K. Rysbekov

Head of the Department of Chemical Processes and Industrial Ecology — Sh. Kubekova

Specialty Council representative from employers — D. Burlibayeva

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APPROVED
Director of the Mining and Metallurgical Institute
K. Rysbekov
«__» _____ 2023 г.

MAJOR ELECTIVE DISCIPLINES educational program for the 2023-2024 academic year admission
Educational program 6B05206 - "Engineering ecology"
Group of Educational programs B051 - "Environment"

Full-time study Study duration : 4 years Academic degree: bachelor of natural sciences

Year of study	Code of elective	Code of discipline	Name of discipline	Semestr	Cycle	Credits	Total hours	lec/lab/pr	SIW (including SIWT) in hours
	M-5. Module of anti-corruption culture, ecology and life safety base								
2	1201	HUM 136	Fundamentals of Anti-Corruption Culture and Law	3	GED, CCH	5	150	2/0/1	150
		MNG 489	Fundamentals of Economics and Entrepreneurship						
		HPP128	Scientific research methods						
		CHE 656	Ecology and life safety						
	M-8. Module of Basic Chemical Training								
	2201	CHE436	Green chemistry	3	BD, CCH	5	150	1/0/2	105
		BIO408	Ecological chemistry					2/0/1	
		HPP132	Fundamentals of Ecology					2/0/1	
3	**M-9. Module of General environmental training**								
	2301	CHE852	Industrial and environmental safety	5	BD, CCH	5	150	2/0/1	105
		HPP100	Industrial ecology and industrial safety					1/0/2	
	2302	CHE645	Industrial ecology	5	BD, CCH	5	150	2/0/1	105
		CHE853	Urban ecology						
	2303	MAP577	Remote sensing of the state of the environment	5	BD, CCH	5	150	2/0/1	105
		CHE421	Modeling and optimization of chemical technological processes						
	2304	CHE856	Soil ecology	6	BD, CCH	5	150	2/0/1	105
		HPP133	Soil science and remediation methods						
4	2305	CHE605	Environmental problems of our time and Sustainable Development	7	BD, CCH	5	150	2/0/1	105
		CHE884	Sustainable Development and ESG						
3	**M-10. Module of professional activity**								
	3301	HPP134	Human ecology	6	ПД КВ	4	120	2/0/1	75
		HPP135	Systemic risks in the field of environmental protection						
4	3401	CHE857	Fundamentals of Environmental Design and Environmental Engineering	7	ПД КВ	6	180	2/0/2	120
		CHE843	Fundamentals of Designing Chemical Industry Enterprises						
	3402	CHE862	Reagent production technology, wastewater treatment	7	ПД КВ	5	150	2/1/0	105
		CHE863	Natural and waste water treatment technology						
	3403	CHE864	Air-pollution control	7	ПД КВ	6	180	2/0/2	120
		CHE865	Cleaning technology systems and use of exhaust gas						
	3404	CHE446	Ecoanalytics and environmental protection measures	8	ПД КВ	5	150	2/0/1	105
		HPP138	Ecological and normative documentation at the enterprise						
		CHE447	Ecotechnology and green energy						
	3405	BIO161	Disposal, disposal and disposal of industrial waste	8	ПД КВ	5	150	2/0/1	105
		CHE441	Waste management						
	3406	BIO139	Fundamentals of Industrial Technologies	8	ПД КВ	5	150	2/0/1	105
		BIO141	Ecologic basis of industrial technologies						

Credits numbers of elective disciplines over the entire period of study	
Cycle of disciplines	**Credits**
Cycle of general education disciplines (GED)	5
Cycle of basic disciplines (B)	30
Cycle of special disciplines (S)	36
Overall:	**71**

Decision of the Academic Council of Mining and Metallurgical Institute. Protocol № 3 " 15 " 11 2022 y.

Head of the department "Chemical Processes and Industrial Ecology" **Kubekova Sh.N.**

Representative of Specialty council **D. Burlibayeva**