NCJS «KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY
named after K.I.SATBAYEV»

Institute of Architecture and Construction named after T. Basenov

Department of Engineering Systems and Networks

EDUCATIONAL PROGRAM
7M11201 «Occupational health and safety»

Code and classification of the field of education	**7M11 Services**
Code and classification of training directions	**7M112 Hygiene and labor protection at work**
Group of educational programs	**M150 Sanitary measure**
Level according to NQF	**7**
Level according to ORK	**7**
Duration of study	**2 years**
Amount of credits	**120**

Almaty 2025

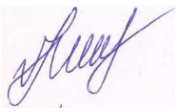
Educational program 7M11201 Occupational health and safety was approved at the meeting of K.I. Satbayev KazNRTU Academic Council

Minutes # 10 dated «06» Mart 2025.

was reviewed and recommended for approval at the meeting of K.I. Satbayev KazNRTU Educational and Methodological Council

Minutes # 3 dated 20. 12. 2024.

Educational program 7M11201 «Occupational health and safety» was developed by academic committee based on direction 7M112 «Hygiene and labor protection at work»

Full name	Academic degree/ academic title	Position	Workplace	Signature
Chairperson of Academic Committee:				
Alimova K.K.	cand. tech. science	head of chair, assoc. prof.	KazNRTU named K.I. Satbayev	
Teaching staff:				
Shevtsova V.S.	cand. tech .science	assoc. prof.	KazNRTU named K.I. Satbayev	
Employers:				
Ensebaev B.K		Vice President	JSC «National Center for Scientific Research, Training, and Education in Civil Defense» of the Ministry of Emergency Situations of the Republic of Kazakhstan	
Students				
Emzhaev Zh.B.		Understudent, 2 course	«Institue of high technologies» LLP KNU	

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List of abbreviations and designations

NCJS KazNRTU named after K.I. Satpayev - NCJS «Kazakh National Research Technical University named after K.I. Satpayev»;
GOSO - State obligatory standard of education of the Republic of Kazakhstan;
EP - educational program;
IWS - independent work of a student (student, undergraduate, doctoral student);
IWSP - independent work of a student with a teacher (independent work of a student (undergraduate, doctoral student) with a teacher);
WCP - working curriculum plan;
CED - catalog of elective disciplines;
UC - university component;
OC - optional component;
NQF - National Qualifications Framework;
SQF - Sectoral Qualifications Framework;
EO - educational outcomes;
SDG - sustainable development goals.

1. Description of educational program

The educational program of the master's program (after EMP) in the direction of preparation 7M11201 «Occupational health and safety» was developed by the Kazakh National Research Technical University named after K.I. Satbayev and provides an opportunity to obtain in-depth knowledge, key skills and abilities of the graduate and his further development in the field of labor protection and industrial safety, protection in emergencies. This EP is built taking into account the possibility of providing a master student with a choice of an appropriate educational trajectory or a specific specialization, based on the main educational program, but containing its own individual competencies, reflecting the specifics of a particular specialization in the direction 7M112 «Hygiene and labor protection at work»

2. Purpose and objectives of educational program

Purpose of EP: The purpose of the educational program 7M11201 – «Occupational health and safety» - is the preparation of highly qualified masters of technical sciences with fundamental scientific knowledge in the field of occupational health and safety at work, industrial safety, protection in emergency situations, capable of implementing the knowledge gained in design and development, production and technological, research, organizational and managerial and scientific and pedagogical activities.

Tasks of EP:

- selection and calculation of the main parameters of human and environmental protection means in relation to specific conditions based on known methods and systems (SDG 12);
- calculation and design work on the creation of means of ensuring safety, rescue and protection of people from man-made and anthropogenic impacts based on broad participation and inclusiveness;
- development of sections of projects related to safety issues, taking into account the expansion of infrastructure and improvement of technologies to provide clean and more efficient energy (SDG 7);
- engineering and design and author's support of scientific research in the field of safety and technical implementation of innovative developments (SDG 12);
- optimization of production technologies in order to reduce the impact of negative factors on humans and the environment (SDG 7);
- conducting an economic assessment of the developed protection systems or proposed technical solutions (SDG 8);
- examination of projects and the state of objects on labor safety and protection in emergency situations (SDG 7);
- selection of life safety systems, fire, chemical, biological and other safety of production (SDG 11);
- formation of occupational safety culture principles within an organization, development of a system for collecting, analyzing, and exchanging information.

Collection of data on human, technical, organizational, and environmental factors determining the overall system safety, taking inclusivity into account.

3. Requirements for the assessment of learning outcomes of the educational program

Awarded degree/qualifications: A graduate of this educational program is awarded the academic degree «master of sciences» in the direction 7M11201 - «Occupational health and safety».

A graduate who has mastered the master's program should have the following general professional competencies:

- the ability to independently acquire, comprehend, structure and use new knowledge and skills in professional activities, develop their innovative abilities;
- the ability to independently formulate research goals, establish a sequence for solving professional problems;
- the ability to put into practice the knowledge of fundamental and applied sections of the disciplines that determine the direction (profile) of the master's program;
- the ability to professionally choose and creatively use modern scientific and technical equipment to solve scientific and practical problems;
- the ability to critically analyze, present, defend, discuss and disseminate the results of their professional activities;
- possession of skills in the preparation and execution of scientific and technical documentation, scientific reports, reviews, reports and articles;
- willingness to lead a team in the field of their professional activity, tolerantly perceiving social, ethnic, confessional and cultural differences;
- readiness for communication in oral and written forms in a foreign language to solve the problems of professional activity.

A graduate who has mastered the master's program must have professional competencies corresponding to the types of professional activities that the master's program is focused on.

Design activity:

- the ability to perform complex engineering and technical developments in the field of safety;
- the ability to predict, determine areas of increased technogenic risk and areas of increased pollution;
- the ability to optimize the methods and means of ensuring human security from the impact of various negative factors in the technosphere;
- the ability to conduct an economic assessment of the effectiveness of the implemented engineering and technical measures.

Production and technological activities:

- the ability to independently carry out production and research and production work in solving practical problems;
- the ability to professionally operate modern equipment and instruments in the

field of the mastered master's program;

- the ability to use modern methods of processing and interpreting complex information to solve production problems;
- the ability to independently draw up and submit projects for research and development work;
- readiness to design complex research and scientific and production works in solving professional problems;
- the ability to independently conduct audits and inspections;
- the ability to assess production risks and draw up plans for corrective actions, to have the skills of HAZOP, HAZID methods;
- the ability to conduct incident investigations according to the «five whys» and «tree of reasons» methods.

Research activities:

- the ability to solve professional problems by integrating fundamental and technical sciences and specialized knowledge in the field of hygiene and labor protection, industrial safety, protection in emergency situations, obtained during the development of the master's program;
- the ability to independently conduct scientific research in the professional field, summarize and analyze experimental information, draw conclusions, formulate conclusions and recommendations;
- the ability to create and explore models of the objects under study based on the use of in-depth theoretical and practical knowledge in the field of life safety;
- the ability to analyze, optimize and apply modern information technologies in solving scientific problems.

Organizational and managerial activities:

- readiness to use the practical skills of organizing and managing research and development work in solving professional problems of protecting the environment at the level of the enterprise, territorial production complexes and regions, as well as the activities of the enterprise in an emergency mode;
- readiness for the practical use of regulatory documents in the planning and organization of scientific and production work on safety issues;
- the ability to interact with government services in the field of industrial, fire safety, protection in emergency situations;
- the ability to rationally address issues of safe placement and use of technical means in the regions;
- the ability to apply in practice the theory of managerial decision-making and methods of expert assessments.

Scientific and pedagogical activity:

- the ability to conduct seminars, laboratory and practical classes;
- the ability to participate in the development of interactive teaching methods, educational and methodological documentation, multimedia materials and methods for monitoring learning;
- the ability to participate in the management of the scientific and educational work of students in the field of life safety.

When developing a master's program, all general cultural and general professional competencies, as well as professional competencies related to those types of professional activities that the master's program is focused on, are included in the set of required results for mastering the master's program.

4. Passport of educational program

4.1. General information

№	Field name	Comments
1	Code and classification of the field of education	7M11 Services
2	Code and classification of training directions	7M112 Hygiene and labor protection at work
3	Educational program group	M150 Sanitary measure
4	Educational program name	7M11201 Occupational health and safety
5	Short description of educational program	The educational program 7M11201 provides an opportunity to obtain in-depth scientific knowledge, research skills and abilities and its further development in the field of labor protection and industrial safety, protection in emergencies
6	Purpose of EP	The purpose of the educational program 7M11201 - "Occupational health and safety" - is the preparation of highly qualified masters of technical sciences with fundamental scientific knowledge in the field of occupational health and safety at work, industrial safety, protection in emergency situations, capable of implementing the knowledge gained in design and development, production and technological, research, organizational and managerial and scientific and pedagogical activities.
7	Type of EP	New
8	The level based on NQF	7
9	The level based on IQF	7
10	Distinctive features of EP	No
11	List of competencies of educational program	General professional competencies; professional competencies (design and engineering activities; industrial and technological activities; research activities; organizational and managerial activities; scientific and pedagogical activities).
12	Educational outcomes of educational program	EO1 - use philosophical concepts of natural science to form a scientific worldview and scientific and methodological foundations in the field of hygiene and labor protection in production; conduct theoretical and practical classes; use pedagogical methods and means to improve the effectiveness of training, achieve inclusive and high-quality education (SDG 4); EO2 - determine the probabilities (frequencies) of hazardous situations using methods of hazard analysis and risk assessment in the occupational safety management system, improve the reliability and sustainability of production facilities, and maintain their functional purpose using systems analysis (SDG 11);

		EO3 - design and calculate safety systems and devices, means of increasing the safety of facilities; evaluate the effectiveness of their work based on the analysis of the conditions of hygiene and labor protection in production; identify the main hazards to the living environment by legislative and legal acts and the conceptual and terminological apparatus in the field of hygiene and labor protection in the production of various production processes in emergency situations (SDG 11); EO4 - to comply with the requirements and restrictions in personal, work and social life, focusing on gender equality, to develop one's own skills and socialize students as successfully as choosing and implementing life plans (SDG 4); EO5 - diagnose problems of hygiene and labor protection in production, identify areas of increased man-made risk and areas of increased pollution of the working environment, develop training programs based on the educational standard taking into account the industry specification for hygiene and labor protection, ensuring safety and sustainable development using assessment and modeling methods, forecasting the development of various processes occurring in natural and man-made systems (SDG 11, 12); EO6 - to resolve occupational safety and health issues based on the study of the occupational safety and health management system OHSAS 18001 and certified state courses in the field of occupational hygiene and health in production; EO7 - make decisions on protecting personnel and the population from possible consequences of accidents, catastrophes, and natural disasters; model hazardous processes in the field of hygiene and labor protection and ensure the safety of the systems being created (SDG 9, 12); EO8 - to develop skills in developing methodological and regulatory materials, technical documentation on occupational hygiene and safety in production, organizing compliance with established national and international requirements, current norms, rules and standards; EO9 - develop and implement new techniques and technologies to ensure hygiene and labor protection using international standards and standards of the Republic of Kazakhstan and participate in improving quality management systems, labor protection and industrial safety management in the organization to minimize the impact of harmful substances and hazards on humans (SDG 9); EO10 - carry out engineering, scientific and methodological work, organizational work, with the aim of improving knowledge and skills under various working conditions, conduct monitoring of industrial safety, technological processes and equipment from the standpoint of ensuring safety (SDG 4, 9); EO11 - conduct scientific and methodological work including engineering and economic calculations of measures to ensure hygiene and labor protection in production, read design documentation and competently draw up a task for the design of measures; conduct preliminary qualification (certification) of

		students to assess the level of training and draw up documentation on the results of training and retraining and interact with stakeholders of higher and postgraduate education (SDG 4, 7).
13	Education form	full-time
14	Period of training	2
15	Amount of credits	120
16	Languages of instruction	russian, kazakh, english
17	Academic degree awarded	master of sciences
18	Developer(s) and authors	Shevtsova V.S.

4.2. Relationship between the achievability of the formed learning outcomes based on educational program and academic disciplines

№	Discipline name	Short description of discipline	Amount of credits	Generated learning outcomes (codes)										
				EO1	EO2	EO3	EO4	EO5	EO6	EO7	EO8	EO9	EO10	EO11
Cycle of general education disciplines University component														
1	Foreign language (professional)	The course is aimed at studying the main problems of scientific knowledge in the context of its historical development and philosophical understanding, the evolution of scientific theories, principles and methods of scientific research in the historical construction of scientific paintings of the world. The discipline will help to master the skills of developing critical and constructive scientific thinking based on research on the history and philosophy of science. At the end of the course, undergraduates will learn to analyze the ideological and methodological problems of science and engineering and technical activities in building Kazakhstan's science and the prospects for its development.	3	**v**										**v**
2	Psychology of management	The course is aimed at mastering the tools for effective employee management, based on knowledge of the psychological mechanisms of the manager's activity. Discipline will help you master the skills of making decisions, creating a favorable psychological climate, motivating employees, setting goals, building a team and communicating with employees. At the end of the course, undergraduates will learn how to resolve managerial conflicts, create their own image, analyze situations in the field of managerial activity, as well as negotiate, be stress-resistant and effective leaders.	3	**v**			**v**							
3	History and philosophy of science	Purpose: to explore the history and philosophy of science as a system of concepts of global and Kazakh science. Content: the subject of philosophy of science, dynamics of science, the main stages of the historical development of science, features of classical science, non-classical and post-non-classical science, philosophy of mathematics, physics, engineering and technology, specifics of engineering sciences, ethics of science, social and moral	3	**v**										**v**

		responsibility of a scientist and engineer.												
4	Higher school pedagogy	The course is aimed at mastering the methodological and theoretical foundations of higher education pedagogy. The discipline will help to master the skills of modern pedagogical technologies, technologies of pedagogical design, organization and control in higher education, skills of communicative competence. At the end of the course, undergraduates learn how to organize and conduct various forms of organizing training, apply active teaching methods, and select the content of training sessions. Organize the educational process on the basis of credit technology of education.	3	v										v
Cycle of basic disciplines Optional component														
5	Methods of conducting scientific research in life safety	The formation of knowledge, skills and abilities that allow to practically use modern methods of scientific research in the field of life safety and necessary competencies for the successful implementation of research, design and organizational and management activities in the same area.	5		v			v						
6	Methodological foundations of life safety training	Formation of knowledge and skills in master's students for successful teaching activities in life safety as a science based on the methodology of teaching the discipline, in accordance with the goal of sustainable development 4 High-quality education with the provision of theoretical knowledge and practical skills necessary for methodological work on covering the issues of creating safe and harmless living conditions. The subject and structure of the discipline of life safety, the concept of risk, system analysis of safety, methods of life safety management are studied to ensure the training of a specialist with professional knowledge and skills in the field of industrial safety in accordance with the goal of SDG 8 Decent work and economic growth	5	v				v						
7	Modern scientific research in the field of technosphere and environmental safety	The study of topical problems in the field of scientific and innovative activities, acquaintance with the achievements of world and domestic science and practice of managing innovative processes in the field of technosphere and environmental safety. The formation of a holistic view of the mechanisms for managing scientific and innovative processes; foundations for independent study and mastery of the mechanisms for managing scientific and innovative	5			v						v		

		processes.												
8	Professional programs in life safety	Knowledge of professional computer programs for their qualified application in practice, provision of modern management of production processes, preventing industrial injuries, occupational diseases, accidents, fires.	5	v				v						
9	State policy in the field of life safety	Knowledge of the state policy in the field of life safety, carried out in the field of protecting the population and territories from natural and man-made emergencies on the basis of a unified state civil protection system.	5				v					v		
10	State policy in the field of industrial and environmenttal safety	Knowledge of state policy, state administration and state supervision carried out by authorized bodies in the field of industrial and environmental safety for sustainable social-economic development.	5				v					v		
Cycle of profile disciplines University component														
11	Conducting a special assessment of the safety and comfort of working conditions	The formation of knowledge in the field of conducting a special assessment of the safety and comfort of working conditions in accordance with the standards of hygienic assessment of existing conditions and the nature of work, assessment of injury safety of workplaces, assessment of the provision of workers with personal protective equipment; the ability to use regulatory documents that determine the procedure for carrying out work on a special safety assessment of industrial facilities.	5							v	v			
12	Scientific and methodological foundations of industrial safety	he basic principles, goals and objectives of scientific and technical policy and research activities in the study of industrial safety. Scientific analysis of human security problems and methods of their solutions at the individual, professional, national and global levels in fundamentally new post-industrial conditions.	5			v						v		
13	Safety issues in projects	Formation of generalizing theoretical knowledge and practical experience in organizational safety management in projects. The use of a single concept, methods, techniques and tools as the most important security mechanisms in projects aimed at coordinating the efforts of all project participants.	5							v	v			

14	Expertise of technospheric and environmental safety	The discipline contributes to the formation of legal and regulatory principles of technosphere and environmental expertise, reveals modern problems of ecology and nature management; risk classification; main approaches to risk management in modern economic conditions; ecological state of the environment; quantitative risk assessment; methods of analysis and evaluation of technological schemes of enterprises for the formation of a waste-free scheme.	5			v	v							
Cycle of profile disciplines Optional component														
15	International law and co-operation in safety	The providing deep fundamental knowledge about the activities of international organizations in the field of international legal regulation of labor, researching modern trends in legal regulation in international labor law, taking into account the patterns of historical development, developing skills in applying the knowledge gained in professional activities.	5				v		v					
16	Modeling in forecasting system technosphere safe-ty	Studying the methodology of systems thinking and complex consideration of complex problems, acquiring knowledge and skills of multidimensional modeling, acquiring knowledge in the field of modeling real processes and phenomena that underlie ensuring the safety of technical systems, acquiring the skills to use the knowledge gained in practical work.	5		v					v				
17	Modern research in the field of life safety	The study of modern patterns of the emergence and development of threats and dangers and methods of effective protection of society (man, his communities, humanity) and his environment from them in any conditions of life.	5				v		v					
18	Technique and technology of protection in the tech-nosphere	The formation of knowledge about the general methods of projecting systems for protecting the environment from radiation, electromagnetic, noise, chemical pollution, air exchange and lighting systems, identifying potential hazards at work, performing a risk assessment and developing appropriate corrective measures in the use of protective equipment and technologies.	5				v			v				
19	Conducting research and assessment of the tech-nogenic impact of indus-trial enterprises on the	The formation of knowledge necessary to reduce the negative impact of the technosphere on the natural environment through the rational and integrated use of raw materials and energy resources or when creating new eco-	5		v					v				

	environment	protective devices and technologies, environmentally friendly production processes, when combining and cooperating industries, as well as when developing an environmental strategy and development policy production.												
20	Sustainable operation of economic entities in the emergency situation	Acquisition of practical skills necessary to systematize scientific research to solve organizational and managerial tasks to ensure industrial safety, increase the stability of industry facilities and life support for the population in emergency situations, taking into account modern requirements; identification of hazards, their sources, levels and causes of occurrence, characteristic of the most energy-intensive industries and processes; development of the main directions of preventive measures to improve the stability of potentially hazardous industries in emergency situations.	5							v		v		
21	Organization and performance of liquidation and assessment of emergencies consequences	The purpose of the study: to prepare undergraduates to solve organizational and managerial tasks to ensure industrial safety, increase the sustainability of industrial facilities and life support for the population in emergency situations, for which it is necessary to study the sustainability of economic facilities and the principles of formation of technosphere regions; hazardous technologies and production; study the sustainability of the functioning of the economic facility and assess the possible situation in the organization during natural disasters, accidents, catastrophes; organization of protection of production personnel and logistical facilities at chemical, radiation, explosive and fire-hazardous enterprises and ways to minimize the risk of emergencies.	5				v			v				
22	Calculation and design of safety systems	Purpose of discipline formation of knowledge about general principles and methods of calculation and design of protection systems from dangerous and harmful production factors and development of recommendations on their basis; formation of skills but preparation of data necessary for calculation of protection means from dangerous and harmful production factors; formation of skills of calculation and design of protection means from dangerous and harmful production factors; development of recommendations on protection systems from dangerous and harmful production factors.	5		v					v				
23	Integrated safety management systems	The theoretical and practical foundations of integrated health and safety management systems to eliminate or	5					v		v				

		minimize risks to workers and other interested parties whose health may be exposed to the hazards associated with their activities.												
24	Certified state course on occupational health and safety	Training of certified specialists who have the right to work as a manager or a person responsible for ensuring occupational safety and health in organizations of any form of ownership on the territory of the Republic of Kazakhstan.	5					v					v	
25	Ensuring fire and explosion safety of technological processes and productions	The discipline is aimed at training specialists who are able to apply the results of fire hazard analysis of technological processes and equipment to supervise fire and explosion safety of production technology. Tasks of the discipline: formation of knowledge in the sphere of organization of management of fire and explosion safety at the enterprise; mastering of methods of estimation of conformity of technological equipment of fire and explosion hazardous productions to the requirements of fire safety; formation of skills of prevention of emergency situations connected with fires and explosions, and also realization of methods of fire and explosion protection at the enterprise.	4				v			v				
26	Expertise and audit of industrial facility safety	This course focuses on training specialists capable of assessing and analyzing the safety levels of industrial facilities. The main objective of the course is to develop skills in conducting expertise and audits in compliance with modern standards and regulatory requirements. Objectives of the Course: study methods for risk assessment and ensuring safety at industrial enterprises: familiarize students with the regulatory and legal framework in the field of industrial safety: develop skills for conducting independent safety audits: enhance analytical approaches to identify potential threats and vulnerabilities in safety systems.	4				v			v				

5. Curriculum of educational program

NON-PROFIT JOINT STOCK COMPANY
"KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY NAMED AFTER K.I. SATBAYEV"

SATBAYEV UNIVERSITY

«APPROVED»
Decision of the Academic Council
NPJSC«KazNRTU
named after K.Satbayev»
dated 06.03.2025 Minutes № 10

WORKING CURRICULUM

Academic year: 2025-2026 (Autumn, Spring)
Group of educational programs: M150 - "Sanitary measure"
Educational program: 7M11201 - "Occupational Health and Safety"
The awarded academic degree: Master of Sciences
Form and duration of study: full time (scientific and pedagogical track) - 2 years

Discipline code	Name of disciplines	Block	Cycle	Total ECTS credits	Total hours	lek/lab/pr Contact hours	in hours SIS (including TSIS)	Form of control	Allocation of face-to-face training based on courses and semesters				Prerequisites
									1 course		2 course		
									1 sem	2 sem	3 sem	4 sem	
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)													
CYCLE OF BASIC DISCIPLINES (BD)													
No module													
LNG213	Foreign language (professional)		BD, UC	3	90	0/0/30	60	E	3				
HUM214	Psychology of management		BD, UC	3	90	15/0/15	60	E	3				
SAF219	Methods of conducting scientific research in life safety	1	BD, CCH	5	150	15/0/30	105	E	5				
SAF228	Methodological foundations of life safety training	1	BD, CCH	5	150	15/0/30	105	E	5				
SAF233	Modern scientific research in the field of technosphere and environmental safety	2	BD, CCH	5	150	15/0/30	105	E	5				
SAF220	Professional programs in life safety	2	BD, CCH	5	150	15/0/30	105	E	5				
HUM212	History and philosophy of science		BD, UC	3	90	15/0/15	60	E		3			
HUM213	Higher school pedagogy		BD, UC	3	90	15/0/15	60	E		3			
SAF201	State policy in the field of life safety	1	BD, CCH	5	150	15/0/30	105	E			5		
SAF224	State policy in the field of industrial and environmental safety	1	BD, CCH	5	150	15/0/30	105	E			5		
No module													
AAP273	Pedagogical practice		BD, UC	8				R			8		
CYCLE OF PROFILE DISCIPLINES (PD)													
No module													
SAF215	Conducting a special assessment of the safety and comfort of working conditions		PD, UC	5	150	15/0/30	105	E	5				
SAF206	Scientific and methodological foundations of industrial safety		PD, UC	5	150	15/0/30	105	E	5				
SAF223	Safety issues in projects		PD, UC	5	150	15/0/30	105	E		5			
SAF237	Expertise of technospheric and environmental safety		PD, UC	5	150	15/0/30	105	E		5			
SAF227	International law and cooperation in safety	1	PD, CCH	5	150	15/0/30	105	E		5			
SAF229	Modeling in forecasting system technosphere safety	1	PD, CCH	5	150	15/0/30	105	E		5			
SAF209	Modern research in the field of life safety	2	PD, CCH	5	150	15/0/30	105	E		5			
SAF218	Technique and technology of protection in the technosphere	2	PD, CCH	5	150	15/0/30	105	E		5			
SAF213	Conducting research and assessment of the technogenic impact of industrial enterprises on the environment	1	PD, CCH	5	150	15/0/30	105	E			5		

SAF235	Sustainable operation of economic entities in the emergency situation	1	PD, CCH	5	150	15/0/30	105	E			5		
SAF211	Organization and performance of liquidation and assessment of emergencies consequences.	2	PD, CCH	5	150	15/0/30	105	E			5		
SAF241	Calculation and design of safety systems	2	PD, CCH	5	150	15/0/30	105	E			5		
SAF225	Integrated safety management systems	3	PD, CCH	5	150	15/0/30	105	E			5		
SAF216	Certified state course on occupational health and safety	3	PD, CCH	5	150	15/0/30	105	E			5		
No module													
SAF243	Ensuring fire and explosion safety of technological processes and productions	1	PD, CCH	4	120	30/0/15	75	E				4	
SAF244	Expertise and audit of industrial facility safety	1	PD, CCH	4	120	30/0/15	75	E				4	
No module													
AAP286	Research practice		PD, UC	4				R				4	
No module													
AAP282	Research work of a master's student, including internship and completion of a master's thesis		RWMS	4				R	4				
AAP282	Research work of a master's student, including internship and completion of a master's thesis		RWMS	4				R		4			
AAP283	Research work of a master's student, including internship and completion of a master's thesis		RWMS	2				R			2		
AAP255	Research work of a master's student, including internship and completion of a master's thesis		RWMS	14				R				14	
No module													
ECA212	Registration and protection of the master thesis		FA	8								8	
Total based on UNIVERSITY:									30	30	30	30	
									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	0	0	0	0
BD	Cycle of basic disciplines	0	20	15	35
PD	Cycle of profile disciplines	0	24	29	53
Total for theoretical training:		**0**	**44**	**44**	**88**
RWMS	Research Work of Master's Student				24
ERWMS	Experimental Research Work of Master's Student				0
FA	Final attestation				8
TOTAL:					**120**

Decision of the Educational and Methodological Council of KazNRTU named after K.Satpayev. Minutes № 3 dated 20.12.2024

Decision of the Academic Council of the Institute. Minutes № 4 dated 10.12.2024

Signed:

Governing Board member - Vice-Rector for Academic Affairs — Uskenbayeva R. K.

Approved:

Vice Provost on academic development — Kalpeyeva Z. B.

Head of Department - Department of Educational Program Management and Academic-Methodological Work — Zhumagaliyeva A. S.

Director of the Institute - Institute of Architecture and Civil engineering named T.K. Bassenov — Kuspangaliyev B. .

Department Chair - Engineering systems and networks — Alimova K. K.

Representative of the Academic Committee from Employers ____Acknowledged____ — Yensebayev B. K.