Non-commercial joint-stock company
« Kazakh National Agrarian Research University »

«AGREED»
Head of the state institution "Kazselezaschita" of the Ministry of Emergency Situations of the Republic of Kazakhstan
_____ E.Sadyrbayev
«____» _____ 2024

«APPROVED»
Chairman of the Board – Rector
_____ A.Kurishbaev
«____»_____2024

EDUCATIONAL PROGRAM

«7M11201- Life safety and environmental protection»

Awarded degree: Master of Science under the educational programme
7M11201 - " Life safety and environmental protection»
(scientific and pedagogical direction)

Almaty 2024

Approved at the meeting of the Department «Agricultural machinery and mechanical engineering»
Protocol №6, «12» 01 2024

Head of the department _____ Zh. Zhumagulov

Considered at meetings Academic committee of the Faculty of «Engineering - technical»
Protocol №6, «26» 01 2024

Chairman of the AC of the faculty _____ U. Ibishev

Reviewed by the Educational Methodological Council of the University and recommended to the Academic Council
Protocol №4, «01» 02 2024

Chairman of the EMS of the University _____ A. Abdyrov

The educational program was approved at the meeting of the Academic Council of KazNARU
Protocol №9, «01» 03 2024

Developers:

Dean of the Faculty		L. Aldibaeva
Head of department		Zh. Zhumagulov
Senior lecturer		A.Dyussenbiyeva
Student		A.Zholdasova
Graduate of 2023		A. Zhastalapova

Employers:
Head of state institution «Kazselezachita» of the Ministry of Emergensy Situations of the Republic of Kazakhstan _____ E.Sadyrbayev

Agreed:
Head of the Educational Program Design Office Zh. Kussainova

Application

It is intended for the training of masters in the educational program "7M11201-Life safety and environmental protection" in the NAO " Kazakh National Agrarian University»

Regulatory documents:

Law of the Republic of Kazakhstan on education Astana, Akorda, July 27, 2007 No. 319-III ZRK (with amendments and additions as of 01.01.2019)

State mandatory standard of higher and postgraduate education. Approved by the decree of the Government of the Republic of Kazakhstan dated October 31, 2018 No. 604

The classifier of areas of education and training with higher and postgraduate education, No. 569 13.10.2018 g;

Standard rules of activity of educational organizations that implement educational programs of higher and (or) postgraduate education, MES of the Republic of Kazakhstan dated October 30, 2018 No. 595.

Rules for the organization of the educational process on credit technology of training. Order of the MES of the Republic of Kazakhstan No. 563 dated October 12, 2018.

Professional standard "Labor Protection". Appendix No. 26 to the order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated 18.12.2019 No. 255.

Professional standard "Emergency recovery work". Appendix No. 16 to the order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated 27.12.2019 No. 2566.

- Professional standard "Validation and verification of greenhouse gas emissions". Appendix No. 1 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated 30.12.2019 No. 270.
- Atameken NPP website http://atameken.kz/

1. Passport of the educational program
«7M11201 Life safety and environmental protection»

Code and classification of the field of education	**7M11-Services**
Code and classification of training areas	**7M112-Occupational Health and safety at work**
Code and name of the educational program	**7M11201-Life safety and Environmental protection**
Type of educational program	Current
Purpose of the educational program	The purpose of the educational program "7M11201-Life Safety and Environmental Protection" is to train competitive specialists in the labor market in life safety and environmental protection for state, local, regional, and foreign institutions, as well as to train scientific and pedagogical personnel for higher educational institutions and colleges.
Moscow time level	7
The level on the NQF	7
ORC level	7
Number of the application to the license for the training direction	KZ42LAA00006720 March 27, 2019
OP accreditation	Certificate no. KE0284 KAZSEE 23.12.2020 -22.12.2025 y.
Name of the accreditation body	Master of Science in the educational program " 7M11201-Life safety and Environmental Protection»
The period of validity of accreditation	Table 2
Degree awarded	The graduate can carry out professional activities in the following areas:: -Occupational safety and Health Engineer; -environmental engineer (ecologist); - emergency protection engineer; - specialist in state bodies of control and supervision over safety and labor protection, environmental protection, protection in emergency situations; - Chief Technical Officer for Occupational Safety and Health; - teacher on labor protection, environment and protection in emergency situations in secondary, specialized secondary and higher educational institutions; - research associate in research organizations.
Field of professional activity	Educational organizations, including universities, research organizations, all branches of industry, agro-industrial complex, rescue and fire safety services, environmental protection, social protection of the population, state bodies of control and supervision of labor safety
Scope and object of professional activity	- research institutes and educational organizations of

	any profile; - manufacturing enterprises of all industries; - Rescue and fire Safety services of the Emergency Situations Committee of the Ministry of Internal Affairs of the Republic of Kazakhstan; - Central and regional bodies of the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan; - technical supervision and environmental protection services of akimats of all levels; - enterprises of the agro-industrial complex.
Functions of professional activity	The educational program "7M11201-Life Safety and Environmental Protection" includes 2 (two) educational trajectories: **No. 1. FROM " Security of technical systems»** The professional activity of the master is aimed at: - organization of the labor protection management system through the introduction of technical regulation of industrial safety, foreign standards of the International Labor Organization; - participation in the development of measures to prevent occupational diseases and accidents at work, to improve working conditions and bring them up to the requirements of regulatory legal acts on labor protection, as well as provides organizational assistance for the implementation of the developed measures; - control of compliance with the current norms, rules and instructions on labor protection, labor safety standards in the production process, as well as in the projects of new and reconstructed production facilities, participates in their acceptance into operation; - full possession of information about the fire-fighting condition and design features of buildings and structures at economic facilities, fire hazard of technological processes, characteristics of fire-fighting water supply, the state of driveways, communications and alarm systems; - participation in the consideration of the issue of compensation by the employer for damage caused to employees by injury, occupational disease or other damage to health related to the performance of their work duties; - compiles technological regulations, analytical control schedules, passports, instructions and other technical documentation. **No. 2. FROM " Engineering Environmental Protection»** The professional activity of the master is aimed at: - development and adjustment of the plan of the facility management and protection of the population and the action plan of the facility for the prevention and elimination of natural and man-made emergencies; - monitoring the compliance of the company's

	divisions with the current environmental legislation, instructions, standards and regulations on environmental protection, helps to reduce the harmful impact of production factors on the life and health of employees; - participation in the environmental assessment of feasibility studies of projects for the expansion and reconstruction of existing production facilities, as well as new technologies and equipment being created, development of measures for the introduction of new equipment; - participation in conducting research and experimental work on industrial wastewater treatment, prevention of environmental pollution, emissions of harmful substances into the atmosphere, reduction or complete elimination of technological waste, rational use of land and water resources: - monitoring compliance with the technological regimes of environmental protection facilities, analyzes their work, monitors compliance with environmental standards and regulations, the state of the environment in the area of the enterprise location; - control of rational use of subsurface resources, soils, lands and their restoration; - participation in the development of measures to restore plant resources and preserve the gene pool of wild fauna. Undergraduates of both educational trajectories can conduct teaching activities in educational organizations
Types of professional activities	Masters of the training direction "7M112-Occupational health and safety at work" can perform the following types of professional activities: **1. Design and technological support:** - measurement and evaluation of the parameters of the production microclimate, the level of dust and gas pollution, noise, vibration, illumination of workplaces; - calculation and design of industrial lighting, noise insulation and collective means of personnel protection; - design of technological lines in compliance with the requirements of fire safety and security and personnel; - calculation and development of methods and means to reduce the impact of hazardous and harmful production factors on workers; - calculation and design of means of reducing harmful emissions of production into the environment; **2. Organizational and managerial structure:** - development and implementation of technological regulations aimed at reducing the risk of industrial accidents and accidents; - selection and professional training of personnel of production enterprises;

	- calculation of the number of personnel of the labor protection, environmental protection, personnel and public protection services in emergency situations; - personnel management and facility protection in emergency situations. **3. Research and development:** - identification of harmful and dangerous factors on production lines; - monitoring of production and environmental parameters; - conducting research work to develop methods and means to improve safety in the technosphere and habitats; - research and development of measures for the conservation of biological diversity in nature; - organization of work on the assessment of jobs and safety of potentially dangerous industries **4. Scientific and pedagogical:** - study of modern methods of teaching life safety disciplines; - development of scientifically-based methods of professional development of employees at all levels; - the use of innovative teaching technologies in the process of pedagogical activity.
To be competent	- in the field of research methodology; - in matters of innovative technical and technological production in all industries, including agriculture; - in the field of scientific and scientific-pedagogical activity in educational organizations; - in the implementation of scientific projects and research in the professional field.

2. Learning outcomes at the OP

Codes	Learning outcome
LO1	Demonstrate in their professional activities a broad outlook on the history and philosophy of science, psychology and pedagogy, choose modern methods of teaching analysis and scientific foundations of technosphere security, apply optimal options in various conflict situations and develop management solutions
LO2	Use practical solutions to industrial issues in the state and Russian languages, discuss a wide range of scientific, technical, and pedagogical issues, and conduct professional conversations in an international environment in English
LO3	To critically analyze and verify the current directions of research activities in the field of industrial safety, industrial sanitation and occupational health, environmental protection, to defend their point of view in solving problems of research and problem solving
LO4	Plan the organization of scientific research of a team of scientific and engineering workers, solve problems of modeling business solutions, develop leadership qualities in entrepreneurial activity
LO5	Develop methods for assessing the state of the environment and conduct experiments on the inventory of sources of environmental pollution to rank areas of increased pollution and create modern ecobio-protective equipment and technologies
LO6	To study the organization of monitoring in the technosphere, to analyze its results for forecasting zones of increased technogenic risk, to develop effective scientific and engineering measures to reduce or prevent them
LO7	To make a decision to assess the safety and comfort of working conditions of industrial enterprises at the design and operation stages, to develop recommendations for the design of regulatory working conditions, to support the requirements of labor legislation
LO8	To make an expert assessment of the safety and environmental friendliness of industrial enterprises at the design and operation stages, to develop recommendations for improving the level of safety and sustainability of economic facilities in the event of man-made and natural emergencies
LO9	Apply complex engineering and technical calculations in the field of technosphere safety, make a choice of modern technology and technology of protection in the technosphere on the basis of scientific research
LO10	Evaluate the main potentially hazardous and polluting technological processes, explain and predict their negative impact on the environment, and select methods and means for the disposal and processing of industrial waste
LO11	Choose enterprises, educational organizations and research organizations, state bodies as managers or specialists of the labor protection, environmental protection and mobilization service, teachers, researchers and experts to implement their professional competencies
LO12	Demonstrate and argue the desire to continue studying for a doctorate with subsequent work in educational institutions or research organizations

3. Content of the educational program «7M11201-Life safety and environmental protection" (scientific and pedagogical direction)

ПП	VK/ KV	Names of modules	Code of discipline	Name of the discipline that forms the competence	Total academic credits	Volume in hours							Distribution of credits by courses and semes-ters				Department[1]	Form of control
						Total academic hours	Classroom				Extracurricular		1st year		2st year			
							Lectures	Practical classes	Laboratory classes	Other (practice)	SRMP	SRM	1	2	3	4		
1	**TO**		**Theoretical training**		**84**	**2520**	**213**	**537**	**0**	**270**	**375**	**1125**						
CBD: VK/KV			**Cycle of basic disciplines: University component / optional Component**		**35**	**1050**	**84**	**236**	**0**	**0**	**160**	**480**						
1.1	**CBD**		**Cycle of basic disciplines**															
1)	**UC**		**University component**		**20**	**600**	**39**	**131**	**0**	**0**	**85**	**255**						
			including:															
1.1.1	UC	Science communication and	HPS 60201	History and philosophy of science	**4**	120	12	28	0	0	20	60	4				29	Exam
1.1.2	UC		FL 60202	Foreign language (for specific purposes)	**4**	120	0	40	0	0	20	60	4				14	Exam
1.1.3	UC		TT 60203	Tertiary Teaching	**5**	150	15	35	0	0	25	75	5				6	Exam
1.1.4	UC		MP 60204	Managerial Psychology	**4**	120	15	28	0	0	20	60		4			6	Exam

1.1.5	**UC**		TP 60200	Teaching practice	**3**	90				90				3				Report
2)	**CC**		**Component of choice**		**15**	**450**	**45**	**105**	**0**	**0**	**75**	**225**						
			No. 1 educational trajectory " Safety of technical systems»															
1.1.6	CC	Module 2	SAaDMIS 60205	System analysis and decision-making in industrial safety	**5**	150	15	35	0	0	25	75	5				8	Exam
1.1.7	CC		SFoTS 60206	Scientific foundations of technosphere safety	**5**	150	15	35	0	0	25	75	5				8	
1.1.8	CC		AoSaCoWC 60307	Assessment of safety and comfort of working conditions	**5**	150	15	35	0	0	25	75	5				8	
	CC		**No. 2 educational trajectory " Engineering environmental protection»**															
1.1.9	CC	Модуль 3	MBoEA 60208	Methodological bases of environmental assessment	**5**	150	15	35	0	0	25	75	5				8	Exam
1.1.10	CC		IoEPS 60209	Inventory of environmental pollution sources	**5**	150	15	35	0	0	25	75	5				8	
1.1.11	CC		UoAWaCoBDiN 60210	Utilization of agricultural waste and conservation of biological diversity in nature	**5**	150	15	35	0	0	25	75	5		6		8	
MSC: UC/OC			**Cycle of core disciplines: University component/ Elective component**		**49**	**1290**	**129**	**301**	**0**	**0**	**215**	**645**						
1.2	**MSC**		Cycle of core disciplines															
1)	UC		University component		**20**	**600**	**60**	**140**	**0**	**0**	**100**	**300**						
1.2.1	UC		Con60301	Conflictology	**4**	120	12	28	0	0	20	60			4		6	Exam
1.2.2	UC		MoSRiLSaEP 60302	Methodology of scientific research in life safety and environmental protection	**5**	150	15	35	0	0	25	75			5		8	Exam
1.2.3	CC	Модуль 4	MBS 60303	Modeling business solutions	**4**	120	12	28	0	0	20	60			4		9	Exam
1.2.4	CC		PMiTFoE 60304	Project management in the field of entrepreneurship	**7**	210	21	49	0	0	35	105			7		2	Exam

2)	CC		**Optional component**		**23**	**690**	**69**	**161**	**0**	**0**	**115**	**345**						
	CC		**No. 1 educational trajectory " Safety of technical systems»**															
1.2.5	CC	Модуль 5	PUNID 60303	Planning and management of scientific and innovative activities	**6**	180	18	42	0	0	30	90			6		8	Exam
1.2.6	CC		TTZT 70306	Technique and technology of protection in the technosphere	**6**	180	18	42	0	0	30	90			6		8	
1.2.7	CC		IRBBOT 70307	Engineering calculations in occupational safety and health	**6**	180	18	42	0	0	30	90		6			8	
1.2.8	CC	Модуль 6	UFOECh S 70308	Sustainable functioning of economic facilities in emergency situations	**5**	150	15	35	0	0	25	75			5		8	
1.2.9	CC																	
	CC		**No. 2 educational trajectory " Engineering environmental protection»**															
1.2.10	CC	Модуль7	UBR 70309	Managing business solutions	**6**	180	18	42	0	0	30	90			6		8	Exam
1.2.11	CC		FNIOE 70310	Basic scientific research in the field of environmental safety	**6**	180	18	42	0	0	30	90			6		8	
1.2.12	CC		SETT 70311	Modern ecobioprotective technology and technology	**6**	180	18	42	0	0	30	90			6		8	
1.2.1.3	CC	Мо дул	EE 70312	Environmental assessment	**5**	150	15	35	0	0	25	75			5		8	
3)	**UC**		**IP 60300**	**Research practice**	**6**	**180**				**180**				**3**	**3**		**8**	Report
2	**NIRM**		**NIRM** 603001	Research work of a master's student (NIRM), including the completion of an internship and the completion of a master's thesis	**24**	**720**				**720**			2	2	2	18		Report
3	**UC**		**IA 603002**	Final certification	**12**	**360**				**360**						12		
1)				Preparation and defense	**12**	360										12		PDMT

				of the Master's thesis (OiZMD)														
		TOTAL по МЕР:			**120**	**3600**	**213**	**537**	**0**	**1350**	**375**	**1125**	**30**	**30**	**30**	**30**		

[1] note:

Room of the Department	REDUCED	Name of the Department
1	AaF	Accounting, audit and Finance
2	AMO	Agribusiness management and organization
3	Right	Right
4	WRR	Water resources and reclamation
5	MU	"Machine use" named after I. V. Sakharov
6	VT	Vocational training
7	MCAM	Mechanics and construction of agricultural machinery
8	ATT	Agricultural machinery and technology
9	ITMPh	Information technology, mathematics and physics
10	ESA	Energy saving and automation
11	LRH	Land resources and cadastre
12	FRH	Forest resources and hunting
13	PPQ	Plant protection and quarantine
14	FL	Foreign language
15	KRL	Kazakh and Russian languages
16	SSA	Soil science and Agrochemistry
17	Eco	Ecology
18	FVNG	Fruit and vegetable and nut growing
19	Agr	Agronomy
20	BS	Biological safety
21	CVM	Clinical veterinary medicine
22	OSBR	Obstetrics, surgery and biotechnology of reproduction
23	MV	Microbiology and Virology
24	VSEH	Veterinary and sanitary expertise and hygiene
25	TFS	Technology and food safety
26	BPT	Beekeeping, poultry and fisheries
27	LPT	Livestock production technology
28	PMB	"Physiology, morphology and biochemistry" named after N. O. Bazanova
29	HKCPK	History of Kazakhstan and culture of the peoples of Kazakhstan
30	PhES	Physical education and sports
31	Military	Military department

Appendix to information about items

Competence of scientific and pedagogical magistracy
«7M11201-Life safety and environmental protection»

Description of competence	**Type of competence**	**№ competence**
Knowledge of the history and philosophy of the development of science	PC	1
Ability to conduct a reasoned conversation on a wide range of scientific issues	PC	2
Ability to demonstrate a broad outlook in the philosophy of science, psychology and pedagogy	PC	3
Ability to conduct a professional conversation in an international environment in English	PC	4
Be able to discuss when considering issues in a comprehensive assessment of the history and stages of the formation of occupational health and safety at work as a science; use as materials in the course of lectures on the history and stages of the formation of occupational health and safety at work as a science	PC	5
Be able to form and transform the flow of information in the formation of the stages of occupational health and safety in the workplace as a science	PC	6
Formation of the ability of undergraduates to work according to modern teaching methods teaching life safety	PC	7
The ability to monitor the quality of the formation of occupational health and safety in the workplace as a science	PC	8
The ability of undergraduates to use special computer products, quickly master modern computer programs; knowledge of professional computer programs in the field of occupational health and safety as a science	PC	9
The ability to understand and find the best ways to use professional computer programs as a means of forming special competencies in the structure of professional competence of future specialists in occupational health and safety as a science	PC	10
Ability to apply mathematical methods in professional activity in unity with information technologies	PC	11
Knowledge of the essence, purpose, methodology and methods of carrying out scientifically based research in the field of knowledge of safety and emergency situations, labor protection	PC	12
Knowledge of methods and methods of experiment planning for establishing reliable values of hazardous and harmful factors of production and the environment	PC	13
Ability to use diagnostic methods to determine the parameters of the production and environment	PC	14
The ability to create normal and safe conditions for human activity based on scientific research	PC	15
The ability of undergraduates to solve the problems of designing	PC	16

technical systems of occupational health and safety at work (GOTP) as a science		
Knowledge of the main components and values of normal production and environmental conditions, depending on the field of human activity	PC	17
Ability to use instrumental techniques, methods of planning and conducting scientific research	PC	18
Knowledge of the basics of scientific research, management of scientific projects, business solutions	PC	19
Ability to set and solve tasks for research and solving problems of life safety	PC	20
Ability to control the psychological climate in the production team	PC	21
Ability to select personnel by professional aptitude	PC	22
Ability to form the psychology of safe thinking in a team	PC	23
Ability to prevent phenomena that are harmful to human health and the environment	PC	24
Knowledge of issues of social protection of employees	PC	25
Desire for physical self-improvement, knowledge of the basics of a healthy lifestyle	PC	26
Knowledge of the scientific skills necessary in the professional activity of working in research organizations that solve issues of life safety	PC	27
Ability to set and solve research tasks in the field of life safety	PC	28
Ability to work with scientific and specialized literature in search of solutions to scientific security problems	PC	29
Understanding the special social and scientific and technical significance of your profession	PC	30
The desire to continue scientific education in the chosen specialty and to develop as a scientist in demand by the labor market	PC	31
Ability for professional growth and professional mobility	PC	32

4. Map of competence modules

Professional competence		**Competence CODE**	**Learning outcome**
Basic competencies			
Disciplines			Disciplines
History and philosophy of science	Knowledge of the history and philosophy of the development of science.	CC1	The ability to demonstrate a broad outlook in the philosophy of science, psychology and pedagogy, to use modern methods of teaching the basics of

			occupational health and safety, to find the best options in various psychological situations and to make managerial decisions
Foreign language (professional)	Ability to conduct a professional conversation in an international environment in English	CC4	Practice solving production issues in the state and Russian languages, discuss a wide range of scientific, technical, and pedagogical issues, and conduct professional conversations in an international environment in English
Higher school Pedagogy	Ability to demonstrate a broad outlook in the philosophy of science, psychology and pedagogy	CC3	The ability to conduct a professional conversation in an international environment in English, the ability to maintain a conversation on a wide range of scientific, technical and pedagogical issues
Management psychology	Ability to control the psychological climate in the production team	CC21, CC22, CC23	Choose enterprises, educational organizations and research organizations, state bodies as managers or specialists of the labor protection, environmental protection and mobilization service, teachers, researchers and experts to implement their professional competencies
System analysis and decision-making in industrial safety	The ability of undergraduates to use special computer products, quickly master modern computer programs; knowledge of professional computer programs in the direction of GOTP	CC8, CC9, CC10	Develop methods for assessing the state of the environment and conduct experiments on the inventory of sources of environmental pollution to rank areas of increased pollution and create modern environmental protection equipment and technologies
Methodological bases of environmental assessment	Knowledge of the essence, purpose, methodology and methods of conducting scientifically-based research in	CC11, CC12, CC15	To critically analyze and verify the current directions of research activities in the field of industrial safety, industrial sanitation and occupational health, environmental protection, to defend their

	the field of knowledge of safety and emergency situations, labor protection		point of view in solving problems of research and problem solving
Scientific and methodological foundations of technosphere safety	The ability of undergraduates to solve the problems of designing technical systems of GOTP	CC16, CC17, CC20	To organize monitoring in the technosphere, analyze its results to predict areas of increased technogenic risk, develop effective scientific and engineering measures to reduce or prevent them
Modeling business solution	The ability to create normal and safe conditions for human activity based on scientific research	CC15, CC18, CC20	To critically analyze and verify the current directions of research activities in the field of industrial safety, industrial sanitation and occupational health, environmental protection, to defend their point of view in solving problems of research and problem solving
Conflictology	Ability to control the psychological climate in the production team	CC21, CC22, CC23	To use in professional activity a broad outlook in questions of history and philosophy of science, psychology and pedagogy, to choose modern methods of teaching the analysis and scientific bases of technosphere security, to apply optimal options in various conflict situations and to develop management decisions
Project management in the field of b entrepreneurship	Ability to use instrumental techniques, methods of planning and conducting scientific research	CC18, CC19, CC31	Evaluate the main potentially hazardous and polluting technological processes, explain and predict their negative impact on the environment, and select methods and means for the disposal and processing of industrial waste
Methodology of scientific research in life safety and environmental protection	Ability to use diagnostic methods to determine the parameters of the production and environment	CC12, CC13, CC14	To critically analyze and verify the current directions of research activities in the field of industrial safety, industrial sanitation and occupational health, environmental protection, to defend their point of view in solving problems of research and

			problem solving
Planning and management of scientific and innovative activities	Understanding the special social and scientific and technical significance of your profession	CC19, CC20, CC30	Develop methods for assessing the state of the environment and conduct experiments on the inventory of sources of environmental pollution to rank areas of increased pollution and create modern environmental protection equipment and technologies
Managing business solutions	Ability to select personnel by professional aptitude	CC 12, CC 19, CC 22	Develop methods for assessing the state of the environment and conduct experiments on the inventory of sources of environmental pollution to rank areas of increased pollution and create modern environmental protection equipment and technologies
Technology and technology of protection in the technosphere	Ability to apply mathematical methods in professional activity in unity with information technologies	CC11, CC 13, CC 16	To make an expert assessment of the safety and environmental friendliness of industrial enterprises at the design and operation stages, to develop recommendations for improving the level of safety and sustainability of economic facilities in the event of man-made and natural emergencies
Engineering calculations in occupational safety and health	Ability to work with scientific and specialized literature in search of solutions to scientific security problems	CC14, CC16, CC18, CC29	To make an expert assessment of the safety and environmental friendliness of industrial enterprises at the design and operation stages, to develop recommendations for improving the level of safety and sustainability of economic facilities in the event of man-made and natural emergencies
Sustainable functioning of economic facilities in emergency situations	Knowledge of the main components and values of normal production and environmental conditions, depending on the field of human activity	CC12, CC15, CC17, CC24	To assess the safety and comfort of working conditions of industrial enterprises at the design and operation stages, to develop recommendations for the design of regulatory working conditions, to support the requirements of labor legislation
Assessment of safety and comfort of working conditions	Ability to use instrumental techniques,	CC12, CC14, CC17, CC18	To organize monitoring in the technosphere, analyze its results to predict areas of

	methods of planning and conducting scientific research		increased technogenic risk, develop effective scientific and engineering measures to reduce or prevent them
Basic scientific research in the field of environmental safety	Knowledge of the scientific skills necessary in the professional activity of working in research organizations that solve issues of life safety	CC11, CC12, CC27, CC28	To critically analyze and verify the current directions of research activities in the field of industrial safety, industrial sanitation and occupational health, environmental protection, to defend their point of view in solving problems of research and problem solving
Modern ecobioprotective equipment and technology	Knowledge of the essence, purpose, methodology and methods of conducting scientifically based research in the field of knowledge of safety and emergency situations, labor protection	CC11, CC12, CC29	Apply complex engineering and technical calculations in the field of technosphere safety, make a choice of modern technology and technology of protection in the technosphere on the basis of scientific research
Environmental assessment	Knowledge of the main components and values of normal production and environmental conditions, depending on the field of human activity	CC11, CC14, CC17	To assess the safety and comfort of working conditions of industrial enterprises at the design and operation stages, to develop recommendations for the design of regulatory working conditions, to support the requirements of labor legislation
Utilization of agricultural waste and conservation of biological diversity in nature	Ability to use diagnostic methods to determine the parameters of the production and environment	CC14, CC24, CC25	Apply complex engineering and technical calculations in the field of technosphere safety, make a choice of modern technology and technology of protection in the technosphere on the basis of scientific research
Inventory of environmental pollution sources	The ability to apply the use of diagnostic methods to establish the parameters of the production and	CC14, CC24	The discipline is intended for conducting classes with first-year undergraduates. The discipline will allow undergraduates to understand the methods of determining the sources of environmental

	environment		pollution

5. Summary table showing the amount of loans disbursed by educational program:

Course of study	Semester	Number of subjects studied				Number of academic credits					Total	Total in academic	Quantity	
		CS		MS		Theoretical training	Teaching practice	Exam	Exam	Final certification			Exam	Report
		UC	CC	UC	CC									
I	1	3	3			28			2		30	900	6	1
	2	1		2	1	22	3	3	2		30	900	4	3
II	3			2	3	25		3	2		30	900	5	2
	4								18	12	30	900		1
Total		4	3	4	4	75	3	6	24	12	120	3600	15	7

Application 2.2

Information about disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits	Semester	Emerging competencies
1	**Theoretical training**		**84**		
	Core Subjects Cycle University component / Optional Component				
1.1	**Core Subjects Cycle (CS)**		**35**		
1)	**University component (UC):**		**20**		
	including:				
1.1.1	History and philosophy of science	The course «History and philosophy of science» is compulsory for all specialties of the magistracy. It forms undergraduates ' culture of scientific thinking, develops analytical skills and research activities, gives theoretical and practical knowledge necessary for the future scientist. The study of the discipline is important in an era of increasing urgent need for science and scientists. «History and philosophy of science» introduces the problem of the phenomenon of science as a subject of special philosophical analysis, forms knowledge about the history and theory of science; on the laws of science and the structure of scientific knowledge; on science as a profession and social Institute; on the methods of scientific research; on the role of science in the development of society.	4	1	***To be competent:*** - organization and functioning of science; - in the production of knowledge, patterns of formation and development of scientific disciplines; - in the formulation and solution of problems arising in the course of research activities; - in the application of methodological and methodical knowledge, scientific research, pedagogical and educational work; - in writing scientific articles, abstracts, presentations at conferences, symposia.
1.1.2	Foreign language (for specific purposes)	The main goal of the discipline is the systematic deepening of communicative competence in the framework of international standards of foreign language education based on the further development of the skills and abilities of active proficiency in English in the professional activities of the future master of sciences. Development of a master student skills: - reading literature in English in the specialty for the	4	1	***To be competent:*** - work with lexicographic sources in a foreign language (traditional and on-line).

		receipt and transmission of scientific information; - registration of the extracted information in the form of translations, annotations, abstracts; - conducting conversations in English on topics related to the specialty and scientific work of the master's program student.			
1.1.3	Higher school Pedagogy	The course examines pedagogical science and its place in the system of human sciences, the modern paradigm of education, the system of higher education in Kazakhstan, the education and formation of the personality of a specialist, management in education. An idea of the methodology of pedagogical science, methods and forms of teaching is given. Promotes the disclosure of the professional and communicative competence of the teacher. Forms knowledge about the theory of learning, the content of education, the organization of the learning process, the organization of the SRS, ideas about new educational technologies, the technology of compiling educational materials. Develops ideas about the theory of scientific activity, R & D.	5	1	***Competencies:*** - in solving the problems of higher pedagogical education and prospects for its further development; - in the application of effective university training technologies; - in the main types of pedagogical communicative interaction; - in solving current psychological and pedagogical problems, evaluating the results achieved; - - in the organization and management of students ' activities.
1.1.4	Management psychology	It examines the subject, essence, tasks and structure of management psychology, methods of psychological research and the main approaches to its research. It examines the psychology of the subject of managerial activity, the psychology of cognitive activity, perceptual, mimic, and thought processes in managerial activity. The course forms ideas about etiquette in the activities of a modern business person, the communicative competence of a manager, emotional and volitional states in management activities and the ability to manage.	4	2	***Competencies:*** - in the formation of students ' needs for knowledge and skills of a managerial nature and professionally important qualities of future specialists; - in the formation of students ' understanding of the basics of management; - in the development of independence in the search for information; - in the application of adequate methods of personality research; - - in the practical use of the acquired psychological knowledge in various conditions of managerial activity.
1.1.5	Teaching practice	Pedagogical practice contributes to the development of	3	2	***Competencies:***

		teaching skills among undergraduates, strengthens the theoretical knowledge gained during the study of basic and specialized disciplines. It gives an opportunity to evaluate the future pedagogical activity and professional aptitude of a master's student at the training stage			- in actual problems of modern higher education and pedagogical science; - - in the socio-psychological nature of pedagogical activity;
2)	**Optional component (KV)**		**15**		
	No. 1 educational trajectory " Safety of technical systems»				
1.1.6	System analysis and decision-making in industrial safety	The discipline deals with the structure of the industrial safety system, the basic concepts in the field of industrial safety of hazardous production facilities. Measures to ensure the industrial safety of hazardous production facilities. An approximate sequence of actions for obtaining the right to operate a hazardous production facility. issues development of solutions for engineering and technical measures to prevent man-made and natural emergencies. Prevention of emergency situations arising as a result of possible accidents at the construction site. Prevention of emergency situations, as a result of accidents at nearby potentially dangerous objects and transport communications. Prevention of emergency situations, the sources of which are dangerous natural processes	5	1	***Competencies:*** - in essence, the objectives and methodology of designing a safe framework for occupational health and safety projects; - in the methods of active training of the personnel of project organizations in the issues of technogenic safety and environmental protection; - in matters of prevention and prevention of undesirable events of technological processes.
1.1.7	Scientific foundations of technosphere safety	The discipline includes various forms of educational and research work of students (essays, reports, reports, conducting research during industrial practice, etc.). Work in problem groups, scientific circles, students ' participation in scientific and practical conferences is provided. The special feature of the course is the scientific analysis of human security problems and methods of their solutions at the individual, professional, national and global levels in a fundamentally new post-industrial environment.	5	1	***Competencies:*** - in understanding the essence of the new, post-industrial era of human development; - in the knowledge of modern scientific research on the way to ensure the security of the individual and society; - in conducting scientific research in the field of life safety, determining and analyzing the causes of undesirable events

1.1.8	Assessment of safety and comfort of working conditions	To familiarize students with the legislation of the Republic of Kazakhstan and state legal acts on labor protection and conditions, safety of industrial activities. To form professional competencies for the development of comprehensive measures to assess and improve working conditions for undergraduates. To form a belief that high safety indicators of production activities indicate a successful business, and working conditions that do not meet the regulatory requirements undermine the competitiveness of the enterprise, negatively affect its image and the moral and psychological climate of the workforce To form undergraduates ' skills and abilities to develop measures that improve working conditions.	5	1	***Competencies:*** - in the practical and theoretical foundations of the safety of technological processes and equipment; - in the basic methods and principles of improving working conditions.; - in the development of measures to improve safety and improve working conditions.
	No. 2 educational trajectory " Engineering environmental protection»				
1.1.9	Methodological bases of environmental assessment	The purpose of teaching the discipline is to familiarize undergraduates with the main areas of scientific research in the field of environmental protection by leading domestic and foreign companies. The objectives of studying the discipline are to master the skills of assessing the negative impact on the environment of anthropogenic activities, the ability to set and solve scientific problems to protect the technosphere and the environment. Acquisition of skills in conducting scientific research in the field of protection of the technosphere and the environment. Learn to assess the importance of sustainable development of the natural environment for ensuring normal human living conditions.	**5**	1	***Competencies:*** - in the implementation of research activities in the field of occupational health, safety and health; - in the formulation of scientific tasks for solving problems of safety in the technosphere and environmental protection; - - in matters of scientific research in the field of technosphere safety and environmental protection.
1.1.10	Inventory of environmental pollution sources	The discipline deals with the fundamental issues of modeling environmental pollution in the enterprise. The material is presented in an accessible language with illustrations and examples. The discipline is intended for conducting classes with first-year undergraduates. The discipline will allow undergraduates to understand the methods of determining the sources of environmental pollution	5	1	***Competencies:*** - in identifying potential hazards in the workplace, assessing risks and developing appropriate corrective measures; - in the board of investigations of accidents and potentially dangerous situations, determining the causes that led to their

					occurrence and developing recommendations to prevent their recurrence in the future; - knowledge of the basics of current legislation in the field of OT and TB;
1.1.11	Utilization of agricultural waste and conservation of biological diversity in nature	The purpose of the discipline is to master the information about the new technology of rational use of biological and raw materials, the analysis of biological and raw materials and the study of their use in agriculture. Classification of natural resources. Features of the distribution of raw materials in Kazakhstan, their reserves and prospects for development. Modern technologies for the use of natural resources: biotechnology, low-waste technologies for processing mineral raw materials, their secondary use, closed cycles in the chemical and metallurgical industries, and the use of water resources. Non-traditional methods of using raw materials.	5	1	***Competencies:*** - in the structure and basic principles in the field of waste management of agricultural enterprises; - in the legal, regulatory and organizational framework for ensuring the preservation and disposal of waste at economic facilities; - in monitoring the disposal of waste and the preservation of the biological diversity of the environment.
	Cycle of core disciplines University component/Optional component				
1.2	**Cycle of core disciplines (CPD)**		**49**		
1)	**University component (VK PD):**		**25**		
1.2.1	Conflictology	It examines the main categories of conflictology, conflict typology, and conflict management technologies. Theory of personal behavior in conflict, technologies of effective communication and rational behavior in conflict. It forms an idea of the psychology of the negotiation process for conflict resolution, mediation as a technology for conflict management. Conflicts in society, conflicts in organizations, conflicts and stress.	4	2	***Competencies:*** - in the diagnosis and prevention of conflicts; - in the application of basic methods and technologies, prevention and resolution of conflicts; - in the use of the principles of analysis and management of organizational conflicts; - in possession of various ways to resolve conflict situations based on modern personnel management technologies.
1.2.2	Management psychology	The program of the course history of the development of project management methods; methodological approaches to decision-making on the development of the project concept, its structuring and evaluation; mastering the role of the project manager function at various stages of the	4	2	***Competencies:*** - the ability to independently acquire new knowledge using modern information technologies, the ability to work in a team, lead people and obey, the ability to negotiate;

		project life cycle; introduces the organizational forms of project management and methods of their development and optimization Tools for planning and monitoring the progress of the project; acquisition and development of skills of research and creative work, economic modeling of projects using software tools			- in finding and accumulating information, using information tools and technology, the ability to make calculations and draw conclusions; - knowledge of terminology, basic norms and standards governing the activities of organizations in the field of project planning and management
1.2.3	Planning and management of scientific and innovative activities	Formation of knowledge and skills for successful scientific activity, scientific knowledge of the formation of occupational safety and health as a science based on the methodology of teaching the discipline, with the provision of theoretical knowledge and practical skills necessary for methodological work on the issues of creating safe and harmless living conditions, as well as in creating safe projects of new equipment and technological processes	6	2	***Competencies:*** - in the methodology and implementation of research and teaching activities in the field of occupational health and safety, emergency situations, environmental protection; - in the teaching of special disciplines of occupational health or occupational safety.
1.2.4	Project management in the field of entrepreneurship	Training of students in the system of the sphere of the agro-industrial complex in market conditions. It forms economic thinking, entrepreneurial skills, the ability to find your niche market, open your own business, organize and effectively manage your own enterprise. The competitiveness of the national economy depends primarily on the life position, talent, worldview, theoretical knowledge and practical skills, and economic activity of entrepreneurs.	7	2	***Competencies:*** - to understand the social significance of entrepreneurial activity, to make management decisions and to be responsible for them; - the use of innovative technologies in business activities, the search and processing of information necessary for solving professional tasks; - plan and implement entrepreneurial ideas based on professional and personal development.
1.2.5	Modeling business solutions	The content of the discipline "Business Decision Modeling" provides a systematic link of professional knowledge in the subject area of economics with the ultimate goal of agribusiness, encouraging	6	2	***Competencies:*** - in the management of the agricultural system, including the development of a new computer tool, a new management

		undergraduates to actively and purposefully use the achievements of economic science in the interests of maintaining and improving the competitiveness of enterprises, industries and agricultural production in general. The content of the discipline concisely describes the entire decision-making process, starting from the formalization of the original problem, then through the construction and solution of a mathematical model using a computer to the analysis of the solution and the formation of a management decision.			methodology based on the system approach, theory and methods of decision-making, mathematical modeling, the use of various methodological approaches to modeling and analysis of economic indicators in the information technology environment; - the ability to independently organize and conduct scientific research using modern methods of mathematical modeling and analysis of agro-economic performance indicators.
1.2.6	Methodology of scientific research in life safety and environmental protection	Methodological approaches to the problem of ensuring environmental safety, including the basic concepts, principles, mechanisms and measures in this area. It analyzes the anthropogenic impact on the environment, methods and technologies of its ecological rehabilitation. Attention is paid to the possibility of preventing potential hazards in connection with the development of new innovative technologies in engineering. A partial analysis of the legislation of the Republic of Kazakhstan in the field of ecology and environmental protection is carried out.	5	1	***Competencies:*** - theoretical foundations of life safety in the "man-environment" system»; - legal, regulatory, technical and organizational bases of life safety; - fundamentals of human physiology and rational conditions of activity; - anatomical and physiological consequences of human exposure to traumatic, harmful and damaging factors; - identification of traumatic, harmful and damaging factors of emergency situations.

2)	**Optional component (KV)**		**23**		
No. 1 educational trajectory " Safety of technical systems»					
1.2.7	Technology and technology of protection in the technosphere	Formation of knowledge of general methods of habitat protection and methods of designing systems for protecting the environment from radiation, electromagnetic, noise, chemical pollution, air exchange systems and lighting of the environment, skills in designing systems for protecting the environment from radiation, electromagnetic, chemical, noise pollution, in designing systems for air exchange and lighting of the	6	3	***Competencies:*** - in the theoretical foundations of the safety of technological processes and equipment; - ways and means of increasing the sustainability of the technosphere protection; - in matters of determining the quality and application of technosphere safety controls; - in the management of industrial safety at

		environment. Instill in undergraduates the skills to identify potential hazards in the workplace, perform risk assessments and develop appropriate corrective measures. Teach undergraduates to conduct research and calculations in the field of the use of protective equipment and technologies.			enterprises.
1.2.8	Engineering calculations in occupational safety and health	The main objectives of teaching the discipline are practical training of undergraduates in the field of life safety, training of undergraduates to perform engineering calculations in control, calculation-graphic and other educational works, as well as to assist in practical work on life safety at industrial enterprises.	5	3	***Competencies:*** - ways and means of increasing the stability of protection in the technosphere; - in the basic methods and principles of protecting people in the workplace; - in the calculation and development of measures to improve safety in the technosphere; - in matters of engineering calculation of the quality and optimal application of protection in the technosphere and the environment.
1.2.9	Sustainable functioning of economic facilities in emergency situations	As a result of mastering the discipline, the master acquires knowledge, skills and abilities that ensure the performance of professional duties. The discipline is aimed at preparing undergraduates to solve organizational and managerial tasks to ensure industrial safety, increase the stability of production facilities and life support of the population in emergency situations, taking into account modern requirements; show hazards, their sources and causes, their levels characteristic of the most energy-intensive industries and processes; show the main directions of preventive measures to increase the stability of potentially dangerous industries in emergency situations.	5	3	***Competencies:*** - in methods of forecasting emergency situations and eliminating their consequences; - in the basic methods and principles of protecting people in the workplace; - in the planning and implementation of measures to improve the sustainability of production; - in carrying out rescue and other urgent work during the elimination of the consequences of accidents and catastrophes at work.
No. 2 educational trajectory " Engineering environmental protection»					

1.2.10	Basic scientific research in the field of environmental safety	The purpose of teaching the discipline is to ensure human safety in the modern world, to create a comfortable environment for human life and activity, to minimize the man-made impact on the natural environment, to preserve human life and health through the use of modern technical means, methods of control and forecasting. Independent implementation of scientific research in the field of safety, planning of experiments, processing, analysis and generalization of their results, mathematical and machine modeling, making forecasts, formulating goals and objectives of scientific research aimed at improving safety, creating new methods and systems for protecting people and the environment, determining the plan, the main stages of research, choosing a research method, developing a new research method.	6	3	***Competencies:*** - in the principles of the formation of ecobio-protective equipment and technology; - in the methodology of environmental design and expertise and the ability to use them in practice, assessment of the environmental impact of production facilities - in state and industry standards and systems of life safety (BW) and environmental protection (EPA).
1.2.11	Modern ecobioprotective equipment and technology	The main purpose of training undergraduates in the discipline is to form the necessary knowledge for solving technological problems in the type of professional activity. Provide theoretical and practical skills for the organization and effective implementation of monitoring and control of technological parameters of environmental protection equipment, participation in the development, design and improvement of environmental protection devices. Provide knowledge on the analysis of the characteristics of sources of environmental impacts, environmental protection equipment using the necessary methods and means of protection, creating theoretical models that allow you to predict the impact of production on the environment.	6	3	***Competencies:*** - in the principles of design and operation of ecobioprotective equipment and technology; - in the research and analysis of the designs of ecobioprotective equipment and technologies; - in the analysis of information on modern environmental protection equipment and technologies
1.2.12	Environmental assessment	The purpose of the discipline is to train highly qualified personnel in the field of ecology. It provides in-depth training in the field of theoretical, methodological and methodological knowledge on the organization of environmental expertise for all areas of training. When making a decision to create an industrial facility	5	3	***Competencies:*** - in state and industry standards and environmental protection systems(EPAS), structures and basic principles of the activities of environmental control and supervision bodies;

		(enterprise) as part of a natural-industrial system, when carrying out pre-project and design work, when implementing a project (construction of an object) taking into account all the requirements for the protection and effective use of natural resources, when carrying out measures for environmental impact assessment (EIA), when certifying enterprises and organizations in the field of claimed economic and other activities.			- to conduct a comprehensive environmental assessment of projects for the socio-economic development of territories and cities, business plans for production and other activities, to have the skills to conduct an examination of regulatory legal acts; - in carrying out technical expertise of ecobioprotective equipment and technology.
1.2.13					
3)	Research practice		3	2,3	
2	Research work		**24**		
1)	Research work of a master's student, including the passage of an internship and the completion of a master's thesis (NIRM)		24	2, 3	
4	Final certification (IA)		**12**		
1)	Registration and defense of the master's thesis (OiZMD)		12	4	
	TOTAL:		**120**		

Application EP

Application 1

Practice bases of the educational program
" 7M11201-Life safety and environmental protection»

№	The name of the companies, enterprises, organizations	Contacts, phone number, e-mail
1	RSE "Republican Research Institute for Labor Protection of the Ministry of Health and Safety of the Republic of Kazakhstan",	010000 Nur-Sultan, Kravtsova str., 18Tel (fax): +7 (7172) 57 06 02e-mail: rniiot@rniiot.org.kz
2	RSE " National Research Center for Industrial Safety»	010011 Nur-Sultan, Pobedy ave., 81 RSE "NNITS" KChS of the Ministry of Internal Affairs of the Republic of Kazakhstan Tel. \ Fax 8- (7172) 39-40-07 49-32-22 49-32-77. e-mail: nic_prombez@emer.kz
3	Research and Production Firm NIIPBGO KChS of the Ministry of Internal Affairs of the Republic of Kazakhstan, LLP»	050060 Almaty, Gagarin ave., 153/8 Tel. 8(7277) 337-90-58, 337-90-05 snitc_75@mail.ru
4	TOO " Standard Group LTD»	Almaty, 103 Nazarbayev Street, office 707. e-mail: sapabek@sgl.kz Tel. 8 701 712 4827
5	Labor and Safety LLP»	Almaty, 8 microdistrict, 2 84a e-mail:zhamanzhol@mail.ru tel. 303 94 14
6	Republican Center for Advanced Training in Emergency Situations	Almaty, 300 Baizakov street. e-mail:kursy@mail.ru tel. 8(701 7737 2778
7	The Corps of rescuers-volunteers of the Ministry of Internal Affairs of the Republic of Kazakhstan	Almaty, Abay ave., 143, office 329 Tel. 8 727 270 11 91 e-mail: 191@reskue.kz
8	IGD Kazakhstan LLP»	010017 Nur-Sultan, Almaty district, 17 Kuishi Dina str., office 515 e-mail:valikhan@mail.ru tel. 8(701) 733-46-03