NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

6B11 - Services
(Code and classifcation of the feld of education)

6B112 - Occupational health and safety
(Code and classifcation of the direction of training)

1020
(Code in the International Standard Classifcation of Education)

B094 - Sanitary and preventive measures
(Code and classifcation of the educational program group)

6B11201 - Safety and Environmental Protection
(Code and name of the educational program)

Bachelor
(Level of preparation)

Semey

Educational program

6B11 - Services
(Code and classification of the field of education)

6B112 - Occupational health and safety
(Code and classification of the direction of training)

1020
(Code in the International Standard Classification of Education)

B094 - Sanitary and preventive measures
(Code and classification of the educational program group)

6B11201 - Safety and Environmental Protection
(Code and name of the educational program)

(Level of preparation)

Semey 2023

PREFACE

Developed

The educational program 6B11201 - Safety and Environmental Protection in the direction of preparation 6B112 - Occupational health and safety on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position	Signature
Head of the Academic Committee	Nurymkhan Gulnur	Dean of the Faculty of Engineering and Technology	
Educational program manager	Bakirova Laila	Senior Lecturer of the Department of Chemical Technology and Ecology	
Member of the AC	Sabitova Alfira	Head of the Department of Chemical Technology and Ecology	
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Member of the AC	Kopbaev Kymbat	Head of the Civil Defense Department of the Emergency Situations Department of Semey	
Member of the AC	Toyshibaev Askhat	Head of the branch of the Abai Department of Territorial Use of the State Institution "Kazselezashchita"	
Member of the AC	Narzullaeva Ismigul	Student of group BJ-001, educational program 6B11201 - Life safety and environmental protection	
Member of the AC	Kalykova Yerkezhan	Student of group BJ-101, educational program 6B11201 - Life safety and environmental protection	

Reviewing

Full name of the reviewer	Position, place of work	Signature
Zhanbaev Bolat	Deputy Head of the branch of the Abai Department of Territorial Use of the State Institution "Kazselezashchita"	

Reviewed

at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology
Recommended for approval by the Academic Council of the University
Protocol No.4/6 of "10".04.2023
Chairman of the Quality Assurance Commission G.B. Abdilova.

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

Approved

at the meeting of the Academic Council of the University
Protocol № 1 "01" of September 2023
Chairman of the Academic Council of the University Orynbekov D.R.

Content

1.Introduction

1.1.General data

Training of specialists in ensuring safety in emergency situations of natural and man-made nature at industrial enterprises and institutions of all forms of ownership under the educational program "6B11201 Life safety and environmental protection "is implemented by the Department of"Chemical technologies and ecology" faculty of engineering and technology of the Shakarim University in Semey. The educational program is developed taking into account the needs of the regional labor market, the requirements of regulatory documents of the Ministry of education and science of the Republic of Kazakhstan and is a system of documents for organizing the educational process.
The educational program provides for the education of a student with special educational needs in the conditions of a higher educational institution, as well as his socialization and integration into society.

1.2.Completion criteria

The main criterion for the completion of the educational process for the preparation of bachelors is the mastering by students of at least 205 credits of theoretical training, as well as at least 27 credits of practical training, 8 credits of final certification.
A total of 240 credits.

1.3.Typical study duration: 4 years.

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	Training of specialists, on the basis of the advanced achievements of world and domestic science, allowing to form bachelors of high professional level in the field of services that fully meet the social expectations of society regarding its intellectual, personal and behavioral qualities, abilities for productive professional activity in modern society, development of creative potential, initiative and innovation for the transition to the second stage of higher professional education (master s degree), possessing basic knowledge and professional skills in the field of life safety, labor protection and environmental protection to ensure industrial and environmental safety of Kazakhstan.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	6B11 - Services
Code and classification of the direction of training	6B112 - Occupational health and safety
Code in the International Standard Classification of Education	1020
Code and classification of the educational program group	B094 - Sanitary and preventive measures
Code and name of the educational program	6B11201 - Safety and Environmental Protection
2.3.Qualification characteristics of the graduate	
Degree awarded / qualification	Bachelor`s degree in the field of services in the educational program
Name of the profession / list of positions of a specialist	Expert in the analysis of factors of working conditions, Engineer for occupational safety and health, in occupational safety at work, fire safety inspector, in the organizations of the Ministry of Emergencies
OQF qualification level (industry qualification framework)	6
Area of professional activity	sphere of material production, branches: all branches of the economy, including the military-industrial complex, industry, agriculture and utilities, production and consumption. Non-industrial sphere, branches: state bodies in the field of life safety, environmental protection(OS), protection in emergency situations (ES), environmental services.
Object of professional activity	Enterprises and organizations engaged in the operation of technological systems, networks and protection in emergencies, determining the safety of life and allowing t fire, radiation, chemical other hazards; research and design industry institutes; secondary technical educational institutions.
Types of professional activity	Production and technological; organizational and managerial; design; experimental and research.
Graduate Model	The scope of the graduate`s professional activity includes ensuring human safety, creating a favorable environment for human life and activity, eliminating situations of a natural and man-made nature, preserving human life and health, the environment

	using modern technical means, methods of control and forecasting. The graduate must have the following professional competencies in accordance with the objectives of professional activity and the objectives of the educational program: • master the methods of rationalization of life activities aimed at reducing the anthropogenic impact on the natural environment and ensuring the safety of the individual and society; • own and apply the main regulatory and legal documents in the field of occupational safety and health; • carry out measures to prevent occupational injuries and occupational diseases, comply with safety regulations and regulations, monitor environmental and fire safety of production processes; • use knowledge on the organization of labor protection, the environment to minimize negative environmental consequences and ensure safety in emergencies at economic facilities; • master the basics of safe human interaction with the environment and the basics of protection from negative factors in dangerous situations; • simulate and predict the development of emergencies, identify hazards, assess the negative impacts of the habitat; • apply the principles of preparation and execution of preventive, rescue and recovery operations in relation to natural emergencies of varying severity at the level of the region, district, city, enterprise.

3.Modules and content of the educational program

Module 1. Fundamentals of social and humanitarian knowledge

Foreign language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	26903 (3013347)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The content of the discipline «Foreign language» assumes the formation of students` intercultural and communicative competencies at B1 level. The discipline is aimed at mastering the knowledge, skills and abilities that allow using a foreign language in interpersonal communication and professional activity. All types of speech activity are taught, such as reading, writing, listening and production of texts of level complexity with a certain degree of grammatical and lexical correctness.

Purpose of studying of the discipline

Formation of intercultural and communicative competence of students in the process of foreign language education at a sufficient level (A2, pan-European competence) and the level of basic sufficiency (B1, pan-European competence). Depending on the level of training, the student at the time of completion of the course reaches the B1 level of the pan-European competence if the language level of the student at the start is higher than the A2 level of the pan-European competence.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Foreign language

Kazakh language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27472 (3013351)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at deepening the acquired knowledge of students in the framework of the school curriculum, as well as the use of language and speech means based on a full understanding of vocabulary and grammatical system of knowledge; the formation of socio-humanitarian worldview of students within the framework of the national idea of spiritual revival; free expression of mobile thought as a means of speech communication and in the process of communication; awareness of the national culture of the people, the ability to distinguish features of national cognition.

Purpose of studying of the discipline

Forms through phraseological units the recognition of national culture, its meaning as a linguistic unit related to spiritual culture; skills of identifying facts of national and cultural significance in the formation of Kazakh phraseology.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Kazakh language

Bases of economics, law and ecological knowledge

Discipline cycle	General educational disciplines

Discipline component	University component
SubjectID	27473 (3013437)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The integrated discipline includes the main issues and principles in the field of fundamentals of law and anti- corruption culture, economics, entrepreneurship and leadership, ecology and life safety. Features of the use of regulatory legal acts, the ability to use the business, ethical, social, economic, entrepreneurial and environmental standards of society. Specifics of environmental-legal, economic, entrepreneurial relations, leadership qualities and principles of combating corruption.

Purpose of studying of the discipline

It consists in studying the basic patterns of the functioning of living organisms, the biosphere as a whole and the mechanisms of their sustainable development under the conditions of anthropogenic impact and emergency situations; in understanding the concept of corruption, the legitimacy of the fight against it, the content of the state penal policy; in the formation of students` basic fundamental stable knowledge on the basics of economic theory, in instilling the skills and abilities of economic thinking; in introducing students to the theory and practice of entrepreneurship, to the basics of creating their own business; in the formation of theoretical knowledge and practical skills for the development and improvement of leadership qualities.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Russian language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27471 (3013350)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is intended for the development of the language personality of the student, who is able to carry out cognitive and communicative activities in Russian in the areas of interpersonal, social, professional, intercultural communication; for teaching students practical mastery of the Russian language in various areas of communication and various situations, mastering the specifics of functional semantic types and genres of functional styles of speech, enriching the vocabulary with special vocabulary, forming and improving the skills of monologue and dialogic speech.

Purpose of studying of the discipline

The purpose of the program is to form the socio-humanitarian worldview of students in the context of the national idea of spiritual modernization, involving the development on the basis of national consciousness and cultural code of the qualities of internationalism, tolerant attitude to world cultures and languages as translators of world-class knowledge, advanced modern technologies, the use and transfer of which can ensure the modernization of the country and personal career growth of future specialists.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Russian language

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27547 (3013353)

Course	1
Term	1
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline
It provides for the joint cooperation of a teacher and a student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline, preparing students for participation in mass sports competitions; forms motivational and value attitudes towards physical culture and the need for systematic physical exercises and sports; gives basic knowledge about the use of physical culture and sports in the development of vital physical qualities.

Purpose of studying of the discipline
The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
School course

Postrequisites
Physical Culture

Foreign language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27466 (3013348)
Course	1
Term	2
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The content of the discipline «Foreign language» assumes the formation of students`linguo- cultural, socio- cultural, cognitive and communicative competencies at B2 level. The discipline is aimed at deep and extended study of productive and receptive language material. As a result, the student must be able to understand all types of speech activity in accordance with the requirements of B2 level and master the subject content of the discipline and speech.

Purpose of studying of the discipline
Formation of linguo- culturological, socio- cultural, cognitive and communicative competence of students in the process of foreign language education at the B2 level, pan-European competence. Depending on the level of training, the student at the time of completing the course reaches the level B2 of the pan-European competence, if the language level of the student at the start is higher than the level B1 of the pan-European competence.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Foreign language

Postrequisites
Basic and profile disciplines of the EP

The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27477 (3013435)
Course	1
Term	2
Credits count	8
Lections	30hours
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	55hours
Independent work of the student	110hours
Total	240hours

Knowledge control form	Examination

Short description of discipline
The module of socio-political knowledge involves the study of four scientific disciplines – sociology, political science, cultural studies, psychology, each of which has its own subject, terminology and research methods. Interactions between these scientific disciplines are carried out on the basis of the principles of information complementarity; integrativity; methodological integrity of research approaches of these disciplines; generality of the methodology of learning, result-oriented; unified system representation of the typology of learning outcomes as formed abilities.

Purpose of studying of the discipline
Formation of social and humanitarian worldview of students in the context of solving the problems of modernization of public consciousness, defined by the state program "Looking into the Future: Modernization of Public Consciousness".

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
School course

Postrequisites
Philosophy

Russian language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27474 (3013349)
Course	1
Term	2
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is intended for the development of the language personality of the student, who is able to carry out cognitive and communicative activities in Russian in the areas of interpersonal, social, professional, intercultural communication; to teach the scientific style of speech as a language of specialty, the creation of secondary texts, the formation of skills for the production of oral and written speech in accordance with the communicative goal and the professional sphere of communication, instilling the skills of speech etiquette, business rhetoric.

Purpose of studying of the discipline
The purpose of the program is to form the socio-humanitarian worldview of students in the context of the national idea of spiritual modernization, involving the development on the basis of national consciousness and cultural code of the qualities of internationalism, tolerant attitude to world cultures and languages as translators of world-class knowledge, advanced modern technologies, the use and transfer of which can ensure the modernization of the country and personal career growth of future specialists.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Russian language

Postrequisites
Basic and profile disciplines of the EP

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27548 (3013354)
Course	1
Term	2
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline
It provides for the joint cooperation of a teacher and a student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline, the ability to exercise control and self-control in the process of classes, gaining knowledge on health promotion, hardening and increasing the body`s resistance to the effects of adverse factors of labor activity, mastering methods of selection of physical exercises and sports.

Purpose of studying of the discipline
The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the

persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Physical Culture

Postrequisites

Physical Culture

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27468 (3013356)
Course	2
Term	1
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline

Provides for the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline; increasing the level of physical fitness and developing physical qualities; mastering the technique of sports; education of discipline, collectivism, comradely mutual assistance; education of mental stability, development and improvement of basic motor qualities - endurance, strength, speed, dexterity, flexibility.

Purpose of studying of the discipline

The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Physical Culture

Postrequisites

Physical Culture

World of Abai

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27486 (3013431)
Course	2
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying historical facts, the philosophical and artistic foundations of the works of Abay Kunanbaev, Shakarim Kudaiberdiev, which form worldview and aesthetic values, the student`s ability to express his opinion, practical skills and perception of such human qualities as morality, honesty, artistic character. The genius of the writers of Kazakh literature and the role of M. Auezov in the study and popularization of Abai`s heritage, the significance of his works for history, literature and science are determined.

Purpose of studying of the discipline

Formation of the meaning of philosophical and ideological being, understanding of the problems raised in the works of Abai Kunanbayuly, Shakarim Kudaiberdiuly, Mukhtar Auezov and application of the acquired knowledge in the practice of everyday life.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites

Basic and profile disciplines of the EP

Information and communication technology

Discipline cycle	General educational disciplines

Discipline component	Compulsory component
SubjectID	27488 (3013436)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at mastering the conceptual foundations of the architecture of computer systems, operating systems and networks by students; formation of the ability to critically understand the role and signifcance of modern information and communication technologies in the era of digital globalization, new "digital" thinking, knowledge about the concepts of developing network and web applications, skills in using modern information and communication technologies in various felds of professional activity, scientifc and practical work, for self-educational and other purposes.

Purpose of studying of the discipline

Formation of the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, methods of collecting and transmitting information through digital technologies

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27487 (3013355)
Course	2
Term	2
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline

Provides for the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline; acquisition of versatile abilities and skills for the development of physical abilities, socio-cultural experience and socio-cultural values of physical culture and sports; development of communication skills, thinking, self-development, the formation of experience in the implementation of sports and recreational and training programs.

Purpose of studying of the discipline

The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Physical Culture

Postrequisites

Physical Culture

Philosophy

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	27498 (3013357)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at developing students` openness of consciousness, understanding their own national code and self-consciousness, spiritual modernization, competitiveness, realism and pragmatism, independent critical thinking, the cult of knowledge and education, a holistic view of philosophy as a special form of understanding the world, mastering key worldview concepts, as well as the development and strengthening of the values of tolerance, intercultural dialogue and a culture of peace.

Purpose of studying of the discipline
Formation in students of a holistic view of philosophy as a special form of knowledge of the world, its main sections, problems and methods of studying them in the context of future professional activities.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites
Basic and profile disciplines of the EP

Module 2.Natural Science

Mathematics

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27465 (3013361)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The purpose of this course is to provide students with fundamental training in mathematics. The course is aimed at forming a sufficiently high culture of mathematical thinking among students and developing the ability to creatively approach problem solving. In addition to studying the fundamental foundations of higher mathematics (elements of analytical geometry, linear algebra, mathematical analysis, differential equations), the course assumes consideration of various applications of mathematics to solving production problems from the field of professional specialization.

Purpose of studying of the discipline
creation of the basis for the development of logical thinking and mathematical culture. Formation of basic knowledge and acquisition of basic skills of using mathematical apparatus for solving theoretical and applied problems, as well as the necessary level of mathematical training for mastering other applied disciplines studied within a specific profile; skills of working with special mathematical literature

Learning Outcomes
ON2 To use the basics of natural science knowledge of modern methods of physical and mathematical analysis and the las of chemistry to solve applied engineering problems.

Prerequisites
School course

Postrequisites
Information and communication technology

Physics

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27464 (3013430)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	0hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours

Total	90hours
Knowledge control form	Examination

Short description of discipline
In process of studying this discipline, students get acquainted with the basic laws, concepts of all sections of physics. Physics is an area of experimental science, performing laboratory work and tasks, students are convinced of unity of the theory and practice of experiments. Students have the opportunity to gain knowledge on the subject in any area of their specialty.

Purpose of studying of the discipline
Formation of ideas about the role of experimental and theoretical methods of cognition of the surrounding world, development of skills for independent solving of physical problems, motivation to study modern scientific literature.

Learning Outcomes
ON2 To use the basics of natural science knowledge of modern methods of physical and mathematical analysis and the las of chemistry to solve applied engineering problems.

Prerequisites
School course

Postrequisites
Theory of combustion and explosion

Chemistry

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27484 (3013419)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the basic concepts and laws of chemistry, classical and quantum-mechanical ideas about the structure of the atom and chemical bonds; consideration of periodic laws and structure of the periodic system of chemical elements, types of chemical bonds; mastering the laws of thermodynamics, chemical kinetics and chemical equilibrium, corrosion of metals, ways of expressing the concentration of solutions; promote the ability to apply the knowledge gained in practice, to solve problems in professional training.

Purpose of studying of the discipline
Familiarization of students with modern ideas about the structure of substances, with the basic theories of chemical processes, with the properties of catalytic and complex systems, as well as with the properties of elements. Knowledge of the basic theory of chemical processes necessary in the study and deeper understanding of all subsequent special disciplines, also give students scientific and practical training in the basics of analytical chemistry.

Learning Outcomes
ON2 To use the basics of natural science knowledge of modern methods of physical and mathematical analysis and the las of chemistry to solve applied engineering problems.

Prerequisites
School course

Postrequisites
Environmental pollution

Module 3. Professionally-oriented

Introduction to the profession

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27455 (3013432)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the basic concepts, terms and definitions in the field of life safety, environmental protection, fire safety; ensuring personal safety and health protection; objective patterns of occurrence of dangerous and harmful factors in the biosphere and technosphere; anatomical and physiological human abilities to tolerate exposure to dangerous and harmful factors in normal and emergency situations; means of formation comfortable and safe living conditions and preservation of the natural environment.
Purpose of studying of the discipline
Knowledge of the theoretical and practical foundations of safety, the ability to recognize and assess hazards, identify and implement methods of reliable protection against them, mastery of the main principles-safety priorities in solving any technical problems in the field of scientific research, design developments, production and management.
Learning Outcomes
ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.
Prerequisites
School course
Postrequisites
Doxologia The modern world of dangers Basics of protection from the dangers

Natural disasters

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27456 (3013362)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying natural emergencies: earthquakes, volcanic eruptions, mudflows, landslides, avalanches, floods, tsunamis, hydrological hazards, hurricane, tornado, storm, squall, storm. The course covers: dangerous meteorological phenomena (heavy rain, large hail, cold, heat, drought), forest and steppe fires, epidemics, epizootics, epiphytoties, dangerous phenomena in space (meteorites, comets, asteroids).
Purpose of studying of the discipline
Training of specialists in the field of public protection, prevention and liquidation of emergency situations, increasing the stability of economic facilities and life support of the population to work in the emergency system of the Republic of Kazakhstan.
Familiarization of students with the complex of negative impacts of natural origin, spontaneously or periodically occurring in the biosphere and technosphere.
Learning Outcomes
ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.
Prerequisites
School course
Postrequisites
Safety of vital functions

Educational practice

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27467 (3013363)
Course	1
Term	2
Credits count	2
Study practics	60hours
Total	60hours
Knowledge control form	Total mark on practice

Short description of discipline
During the course of the training practice, the following issues are considered: safety in field and desk conditions; methods of computer modeling of field and desk observations using software (Microsoft Windows, Microsoft Excel); terrain; points of route climate control; sampling of water from the reservoir, determination of quality indicators and physico-chemical composition of water; composition and physical properties of the soil, mechanical and chemical composition.
Purpose of studying of the discipline

Possess the skills of working with information in a computer network in the field of life safety and environmental protection and processing the results of experience by the method of mathematical statistics.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

School course

Postrequisites

Manufacturing Practice I

Safety of vital functions

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27485 (3013420)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying legislative acts, theoretical foundations in the field of life safety, the importance of republican civil protection services, their tasks. The course covers: hazards of the human habitat; classification of natural and man-made emergencies; principles of protection of the population in emergency situations; stability of the functioning of facilities; rescue operations in the affected area; elimination of the consequences of emergency situations.

Purpose of studying of the discipline

Creating safe and harmless living conditions; designing new equipment and technological processes in accordance with modern requirements for the safety of their operation, taking into account the stability of the functioning of economic facilities and technical systems; forecasting and making competent decisions in emergency situations to protect the population and production personnel of economic facilities from the possible consequences of accidents, catastrophes, natural disasters and the use of modern means of destruction, as well as during the elimination of these consequences.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

Introduction to the profession

Postrequisites

Rescue case Facilities in extreme conditions Building construction

Methods and tools for monitoring and measuring

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27479 (3013371)
Course	2
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The discipline includes the following questions: types of instruments, measuring instruments, instruments, characteristics of measuring instruments (parameters, properties, standardization, classification), verification, testing of measuring instruments, verification schemes, graduated, departmental tests, measurement methods, principles, change of measured values, analysis methods based on various measurement principles microclimate, ventilation systems, devices for monitoring the parameters of dust, gas collecting systems.

Purpose of studying of the discipline

Formation of students` understanding of the relationship of measurement, testing and control processes with metrological support for the design, production and operation of products that are used in various fields of science and technology.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

School course

Postrequisites

Manufacturing Practice I

Methods of scientific research in life safety

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27480 (3013370)
Course	2
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The discipline is related to scientific research and the design of life safety. The following issues are considered: research work of students; inventive and patent licensing work, structure and methodology of creative search, fundamentals of patent legislation, preparation and publication of an application for an invention; basic methods of cognition of creativity and science; fundamental approaches and experimental research; stages of research work and directions of choice at the research stage.

Purpose of studying of the discipline

Training of specialists with high general scientific and professional training, capable of independent creative work, having an idea of methodological patterns common to all sciences.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

School course

Postrequisites

Manufacturing Practice I

Doxologia

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27469 (3013367)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the evolution of hazards, the principles of the emergence of the science of "Noxology". Basic definitions of terms, axioms of noxology. Criteria of comfort, danger. Studies the concept of risk, the concept of acceptable risk. Classification and assessment of the hazards of an object in the habitat containing combustible and explosive, toxic substances, sources of ionizing radiation, as well as man-made permanent locally active hazards. Chemical, biological weapons.

Purpose of studying of the discipline

Familiarization of students with the theory and practice of the science of hazards, the study of the origin and cumulative effect of hazards, the principles of their minimization and the basics of protection against them.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

Introduction to the profession

Postrequisites

Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

Regulatory standards in the protection of the environment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27481 (3013372)
Course	2
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The discipline is focused on environmental quality standards. The following issues are considered: rationing of atmospheric air quality; hygienic rationing of the working area; quality standards of reservoirs and soil; normalization of soil quality and soil diversity; normalization of the quality and state of biota; integral way of ecological rationing; food quality; standards of the physical state of the environment; standards of sanitary and protective zones, permissible emissions and discharges, education waste.

Purpose of studying of the discipline

To form ideas about the theoretical and methodological foundations of environmental regulation, about current trends in the development of the environmental regulatory framework and its application for the development of environmental standards for environmental protection facilities.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

School course

Postrequisites

Manufacturing Practice I

Basics of protection from the dangers

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27478 (3013369)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline focuses on the basics of facility safety, hazardous areas and the achievement of technosphere safety. During the training, the following issues are considered: means of collective protection; protection of urbanized territories, natural zones from the effects of the technosphere; protection of the earth, soil from pollution; protection from energy flows, radioactive waste; protection from man-made emergencies, threats; declaration of industrial safety; ways to reduce risks; techniques, tactics of protecting people from threats in technosphere.

Purpose of studying of the discipline

The purpose of the discipline is to introduce students to the basics of safe human interaction with the environment (industrial, household, urban) and the basics of protection from negative factors in dangerous and especially dangerous situations.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

Introduction to the profession

Postrequisites

Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

The modern world of dangers

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27470 (3013368)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course examines the evolution of hazards, harmful substances, vibration, acoustic noise, infrasound, ultrasound, laser, ionizing radiation. During the course, the following issues will be considered: regional, global threats; atmospheric emissions, photochemical smoke, acid precipitation, greenhouse effect; depletion of the ozone layer; impact on the hydrosphere, lithosphere; electric current; mechanical injury; high- pressure systems; transport, radiation, chemical accidents; fundamentals of achievement security of the technosphere.

Purpose of studying of the discipline

The study of the theoretical foundations of the world of hazards and the principles of safety, readiness to implement this knowledge in the process of life and further professional activity

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

Introduction to the profession

Postrequisites

Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

Physiology and psychology of work

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27518 (3013424)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is devoted to the laws of physiological changes of the human body in the process of work, professionally important mental qualities of a person in various fields of activity, the ability of people to work under the influence of industrial and social factors, the causes and criteria for the success of professional activity, occupational safety psychology. The following issues are considered: the role of psychophysiological factors, the physiology of the central nervous system; the severity and intensity of labor; methods and means of labor psychology; organizational development of the labor collective.

Purpose of studying of the discipline

The disclosure of the theoretical and methodological foundations of the problem of professional formation of a person in the process of work, the formation of future specialists in social work of a systemic view of work and its impact on a person, as well as the formation of initial skills of reflection on their own future work.

Learning Outcomes

ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites

Physical factors in the workplace Industrial Ventilation Production sanitation

Postrequisites

Occupational Safety and Health

Ecological safety of the environment

Discipline cycle	Profiling discipline
Discipline component	Electives

SubjectID	27526 (3013374)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying legislative acts principles of ensuring environmental safety, as well as problems and ways to solve them (climate change, ozone layer destruction, biodiversity conservation, desertification, land degradation, environmental disaster zones, problems associated with the development of the resources of the Caspian Sea shelf, the impact polygons of the military space, test complexes, radioactive, chemical and bacteriological contamination). Issues of environmental monitoring, statistics, international cooperation are considered.

Purpose of studying of the discipline
To prepare future specialists for scientific and practical work in the field of environmental safety and environmental protection.

Learning Outcomes
ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites
Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Postrequisites
Industrial toxicology

Environmental safety of Kazakhstan

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27525 (3013373)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the state problems of environmental safety of the Republic of Kazakhstan, the relevance, basic principles of their provision. The course covers: global, national, local environmental problems, issues of greening the economy, legislation and society, as well as international cooperation of the Republic of Kazakhstan in the field of environmental protection and nature management, international environmental conventions,agreements ratified by the Republic of Kazakhstan.

Purpose of studying of the discipline
To train young specialists who know the basic principles of environmental safety, focused on the transition to sustainable development; to familiarize students with the main strategic directions of state policy in the field of environmental safety of the Republic of Kazakhstan; to form theoretical knowledge and practical skills in the field of environmental safety, environmental outlook and environmental culture, taking into account the future professional activity of the student.

Learning Outcomes
ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites
Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Postrequisites
Industrial toxicology

Ecology of Kazakhstan

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27527 (3013375)
Course	3

Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the fundamental concepts, problems and aspects of the ecology of the atmosphere, hydrosphere, soils of Kazakhstan, the impact of rocket components and test sites on the environment. The course covers: production and consumption waste and ways to solve them, the radioecological situation in Kazakhstan, biodiversity, environmental education, upbringing, law, as well as issues related to state policy and management system in the field of environmental protection.

Purpose of studying of the discipline
Acquire knowledge in the field of ecology and biological diversity, and professionally carry out practical activities for environmental protection and sustainable development in the Republic of Kazakhstan.

Learning Outcomes
ON3 To carry out professionally-oriented activities in the field of life safety and environmental protection.
ON4 To understand the essence and social significance of the profession, to put into practice the knowledge of world science in the field of occupational safety and health.

Prerequisites
Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Postrequisites
Industrial toxicology

Module 4. Industrial-safe

Basis of Biochymistry

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	26981 (3013384)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the properties and functions of macromolecules (vitamins, enzymes, hormones), their biological role, classification, mechanism of action. The course deals with: metabolism and energy in the body; integration of cell metabolism; biochemical pathways for the transformation of proteins, carbohydrates, lipids, enzymes, vitamins, hormones; assimilation and dissimilation; anabolism and catabolism; stages of metabolism in the body; the relationship between the metabolism of proteins, nucleic acids, carbohydrates and lipids.

Purpose of studying of the discipline
The study of molecular biochemical processes occurring in the cells and tissues of the animal body under various conditions. Acquisition of knowledge of the chemical foundations of life processes and biochemical processes that occur in the human body during physical exertion.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Physics

Postrequisites
Examination of fire and explosion hazard of production Fire safety industry Porownywania industrial and civil objects

Fire safety

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27483 (3013383)
Course	2

Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the legislative, legal and organizational issues of fire safety, the state system of fire protection of industrial and civil facilities, the environment. The course deals with: combustion and the properties of substances characterizing the explosion hazard; causes of fires; features of their occurrence and distribution; ways and means of extinguishing; lightning protection; automatic fire extinguishing and alarm systems; measures to ensure the fire safety of buildings.

Purpose of studying of the discipline

Formation of fundamental knowledge on the prevention of fires and explosions at industrial and civil facilities, skills and abilities in the use of primary means of fire extinguishing, the study of modern means of fire extinguishing and fire and explosion protection.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Physics

Postrequisites

Examination of fire and explosion hazard of production Fire safety industry Porownywania industrial and civil objects

Theory of combustion and explosion

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27482 (3013382)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course covers: physico- chemical fundamentals of gorenje and gorenje processes; gorenje gorenje; composition of combustion products; Air consumption during combustion; smoke and flame; the concept of fire and explosion hazard; types of explosions and explosives; the main provisions of the theory of detonation; explosive shock wave; the effects of explosion on buildings and people; calculation of excess pressure during an explosion in a room.

Purpose of studying of the discipline

Formation of students` knowledge about the laws of gorenje gorenje and explosion processes accompanying man-made human activity; study of physical and chemical laws of the occurrence, spread and cessation of burning in fires, as an integral part of the branch of knowledge about the state of protection of the individual and property from fires.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Physics

Postrequisites

Examination of fire and explosion hazard of production Fire safety industry Porownywania industrial and civil objects

Rescue case

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27492 (3013379)
Course	2
Term	2
Credits count	5
Lections	15hours

Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is devoted to the organizational foundations of emergency rescue. The course deals with the following issues: search for victims; survey of the rescue site; dismantling, collapse of building structures; extinguishing fires in destroyed buildings, dumps; rescue operations during the liquidation of natural emergencies; features of rescue operations during the elimination of industrial accidents; measures to ensure the safety of rescuers and victims; the procedure for the use of funds and forces for carrying out emergency rescue operations.

Purpose of studying of the discipline
Training of specialists with high professional training for scientific, design and engineering activities in the field of emergency rescue, capable of carrying out rescue and other urgent work in emergency zones, which are carried out in order to save people and provide assistance to victims, localize and eliminate the consequences of emergencies and create conditions for subsequent restoration work.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites
Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Manufacturing Practice I

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27497 (3013416)
Course	2
Term	2
Credits count	5
Working practice	150hours
Total	150hours
Knowledge control form	Total mark on practice

Short description of discipline
The practice includes the study of the following issues: regulatory and legislative acts and constituent documents regulating the organizational and legal status of the enterprise- organization as a business entity; the structure of the enterprise, the nature of its activities as a source of negative impact on the environment; equipping the enterprise with modern equipment and applied technological processes; the state of the enterprise- institution corresponds to safety; analysis and development of industrial safety measures in emergency situations of natural and man-made nature.

Purpose of studying of the discipline
Independently determine the tasks of professional and personal development, engage in self- education, consciously plan advanced training in the field of industrial- safe activities. It applies in practice industrial- safe methods, measures and means that exclude the impact on workers and the environment of hazardous and harmful production factors and industrial pollution

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Safety of vital functions

Postrequisites
Manufacturing Practice II

Facilities in extreme conditions

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27493 (3013380)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the condition of buildings and structures operated in seismic areas, in areas of flooding, in conditions of systemic effects of high–tech, low temperatures, aggressive environment, in conditions of structurally unstable soils. Assessment of the condition of load-bearing and enclosing structures of buildings, structures located in a dangerous area in emergency situations, taking into account the peculiarities of the work of building structures during the liquidation of the consequences of an emergency situation.

Purpose of studying of the discipline

Formation of professional knowledge and practical skills in the construction of buildings and structures of a normative quality level based on the study of industrial methods of construction of various types of buildings and structures based on effective building materials and technologies taking into account various construction conditions.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites

Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Building construction

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27494 (3013381)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The issues are considered in the study of disciplines: modern building structures and their application; load and effects; types of building structures – permanent, wooden, reinforced concrete and stone; areas of their application; reduction of pro reinforced concrete; prevailing and scarce reinforced concrete; sanctity of reinforced concrete structures; types of reinforced concrete structures; principles of design of stone and reinforced concrete structures; material for stone structures; armokmen structures; solid structural scheme of construction.

Purpose of studying of the discipline

Formation, calculation and construction of load-bearing and enclosing structures, based on their purpose and purposes of use, the ability to choose the right materials, cross-section shape, design assembly scheme, ensuring compliance with the required indicators of reliability, efficiency, efficiency; the ability to develop solutions for newly erected or reinforced simple buildings and structures; the ability to calculate structural elements of buildings and structures.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites

Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Recovery technology and recycling of waste production and consumption

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27491 (3013378)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline focuses on waste management methods. The following issues are considered: processing, disposal of solid household waste; technological process of processing industrial waste; burial, incineration; disposal of paper, glass containers, plastic packaging, slag, ash, residues of petroleum products; disposal of agricultural waste; recycling, auto-recycling; microbial waste treatment; disposal of containers and packaging; reuse of containers made of polymer materials.

Purpose of studying of the discipline

Understanding the mechanisms of waste generation, studying the concept of waste management, as well as studying the processes of waste disposal and recycling.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Methods of scientific research in life safety Methods and tools for monitoring and measuring Regulatory standards in the protection of the environment

Postrequisites

Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Disposal, disposal and disposal of industrial waste

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27489 (3013377)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at the general characteristics of waste, their structure, classification, the causes of formation. The following issues are considered: industrial, toxic, household, radioactive waste; waste disposal in Kazakhstan; the impact of waste on the environment; ways to solve problems with production , consumption waste; the Law of the Republic of Kazakhstan «On Production and Consumption Waste»; requirements of international conventions and agreements on the control of transboundary movement of hazardous waste and their disposal.

Purpose of studying of the discipline

Consideration of the main currently existing and promising methods of utilization and processing of agricultural and industrial waste.

Learning Outcomes

ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites

Methods of scientific research in life safety Methods and tools for monitoring and measuring Regulatory standards in the protection of the environment

Postrequisites

Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Recovery, recycling and disposal of consumer waste

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27490 (3013376)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
When studying the discipline, the formation of waste as a result of human activity is considered. The following issues are highlighted: waste disposal processes in a historical perspective; waste classification and basic approaches to the process of their disposal; landfill disposal; disposal as a method of disposal, disadvantages; collection, neutralization of filtered water; production, disposal of biogas; organization of collection, disposal of municipal solid waste in urban conditions, solid waste recycling.

Purpose of studying of the discipline
Consideration of the main currently existing and promising methods of utilization and processing of agricultural and industrial waste.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Methods of scientific research in life safety Methods and tools for monitoring and measuring Regulatory standards in the protection of the environment

Postrequisites
Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Engineering ecology

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27507 (3013429)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the relationship of man with the natural system, the state of the resources of the natural system and their use, the most important environmental problems of our time. The course covers: industry and the environment; pollution of the atmosphere and hydrosphere; regulation of environmental quality; draft standards for maximum allowable emissions, maximum allowable discharges; methods of purification of industrial emissions, bioprotective equipment; methods and technical means of protection of water objects, neutralization, utilization of industrial wastes.

Purpose of studying of the discipline
To acquaint students with the main stages of the formation of the relationship between man and nature; the sources of industrial pollution of the environment, the impact of industrial pollution on living organisms; to show the contradictions between the production of material goods, the laws of the development of the natural system with environmental resources and the peculiarities of their use; to form theoretical knowledge and practical skills in the field of environmental protection, ecological outlook and environmental culture.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Environmental pollution

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Innovative technologies to protect the environment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27506 (3013392)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course deals with: the concept of innovation and innovation; informatics as an innovation in environmental protection; available information technologies, their features. The discipline is aimed at studying
management of environmental protection, information flows in the environmental management system, their classification, trends in the development of information technology, electronic data collection system, building a system of complex indicators of the state of the environment

Purpose of studying of the discipline
Formation of modern ideas about the introduction and promotion of eco- innovations as technologies and tools for improving environmental protection.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Environmental pollution

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

The reliability of technical systems and risk management

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27500 (3013386)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the criteria of reliability of technical systems and building structures, the basics of risk theory. The course deals with the following issues: the normative value of reducing the risk of risk; means of reducing the risk of injury to technical systems; rules for the reliability of technical systems; physical causes of damage, failures; reliability of restored objects. analysis of technogenic hazards; ensuring the safety of technical systems, risk management; analysis of technogenic hazards at the design and operation stage.

Purpose of studying of the discipline
Formation of a system of knowledge about the reliability of technical systems and the threat of a violation of the safety of life in the technosphere - the formation of practical skills for the prevention (or response) of phenomena (consequences) of man-made or natural emergencies. Social causes: traffic accidents, accidents, environmental pollution (including chemical and physical, in particular, ionizing effects), fires, terrorist acts, etc., training of a specialist in the field of fire safety.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Rescue case Facilities in extreme conditions Building construction

Postrequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

The organization and management of rescue in emergency situations

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27501 (3013387)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is devoted to the organization of search, rescue operations. During the training, the following issues will be considered: management of rescue operations; organization of duty, alerts, communications; organization, procedure for emergency response, rescue operations; organization of management of forces, means in the area of the accident; organization of search, rescue operations during emergency response; organization of complex intelligence with the involvement of specialists-chemists, engineers, firefighters, doctors. Organization of evacuation measures in emergency situations of peacetime and wartime.

Purpose of studying of the discipline
To provide students with knowledge in the organization, coordination, management and conduct of search and rescue operations in the shortest possible time, with minimal costs and losses in order to save people and provide assistance to victims. To predict and make competent decisions in emergency situations to protect the population and production personnel of economic facilities from the possible consequences of accidents, catastrophes, natural disasters and the use of modern means of destruction, as well as during the elimination of these consequences.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Rescue case Facilities in extreme conditions Building construction

Postrequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Basics of marketing and management in environmental engineering

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27505 (3013391)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the theoretical and methodological foundations of marketing and management in engineering ecology, the principles, methods and organization of management, the theory of motivation in management. The course covers: modern concepts of marketing; strategy, planning and control of marketing; marketing communication; competitive positions and advantages; international marketing of the enterprise; international and Kazakhstani environmental management standards; ISO 14001 requirements for environmental management system.

Purpose of studying of the discipline
Mastering the basic provisions of the strategy and tactics of management and marketing in environmental engineering and environmental management, obtaining a sufficient set of ideas about the role and place of environmental management and marketing in the overall system of environmental and natural resource activities and achieving a reasonable understanding of the prospects for the development of these areas.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Environmental pollution

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Production sanitation

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27504 (3013390)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the concepts of industrial sanitation, the basics of labor physiology, and sanitary standards for the design of enterprises. The course covers: microclimate parameters and methods for creating comfortable conditions; industrial dust and protection against harmful substances in the air; Ventilation and air conditioning; industrial lighting; noise, vibration, ultrasound as industrial hazards; means of control and protection against acoustic vibrations; industrial poisons and poisonings; non- ionizing electromagnetic fields and radiation.

Purpose of studying of the discipline
Theoretical and practical training of students on industrial sanitation and occupational hygiene, including a system of organizational and sanitary measures and means to prevent exposure to hazardous and harmful production factors (physical, chemical, biological and psychophysiological) and ensuring a high level of efficiency with the least likelihood of occupational diseases associated with human labor.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites
Occupational Safety and Health

Industrial Ventilation

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27503 (3013389)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the theoretical foundations of ventilation, its classification, the state of the atmosphere of industrial enterprises and the thermal regime of premises. The course covers: calculation and aerodynamic bases of air exchange; resistance of air ducts and ventilation schemes; devices for air heating and ventilation air purification; control of air distribution in the ventilation network; noise and vibration control in ventilation systems; technical testing and operation of ventilation systems.

Purpose of studying of the discipline
Formation of a system of knowledge on the basics of the theory and practice of industrial ventilation design, familiarization with the scientific foundations, technical means and practical ways of creating and maintaining normal atmospheric conditions and the required degree of air purity in the workplace and in the human habitation zone in production conditions.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites
Occupational Safety and Health

Protection against negative factors in the technosphere

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27499 (3013385)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the basic concepts and definitions of negative factors in the technosphere, the legal framework in the field of personnel protection. The course covers the following issues: classification of respiratory protection; Overalls, shoes; classification of hand protection; skin protection; measures to ensure collective protection; marking of hazardous areas; safety signs, evacuation schemes.

Purpose of studying of the discipline
Future specialists to create safe and harmless living conditions; in emergency situations: protection of the population and production personnel of economic facilities from possible consequences, disasters, natural disasters and the use of modern means of destruction; equip with theoretical knowledge and practical skills necessary to eliminate the consequences of destruction.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Rescue case Facilities in extreme conditions Building construction

Postrequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Physical factors in the workplace

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27502 (3013388)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the identification, classification and nomenclature of physical factors in the workplace, as well as their characteristics and possible effects on the human body. The course deals with: protecting a person from harmful and dangerous physical production factors; providing safe and comfortable working conditions; management of labor safety at the enterprise; first aid to the injured.

Purpose of studying of the discipline
Formation of fundamental knowledge about the presence of dangerous and harmful physical factors in the workplace, skills related to the use of methods and means of their measurement and control.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Doxologia The modern world of dangers Basics of protection from the dangers

Postrequisites
Occupational Safety and Health

Security rescue operations in emergency situations

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27516 (3013415)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours

Knowledge control form	Examination

Short description of discipline
The discipline examines the basics of ensuring the safety of rescue operations in an emergency. The course includes the following issues: dangerous and harmful factors during rescue operations and other urgent work in an emergency situation; the legal basis for ensuring the safety of rescue operations; rules and regulations of labor protection, modes of labor activity of rescuers; socio-economic issues of labor protection; ensuring the safety of rescue operations in the affected area of an emergency situation.

Purpose of studying of the discipline
Training in the basics of safety of rescue operations, including the principles of ensuring the safety of emergency rescue operations, description of the production environment when carrying out work, Occupational Safety and safety measures when carrying out rescue operations in emergency situations.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

Postrequisites
Tactics of rescue and elimination of consequences of emergency situations Organization of rescue operations Rescue work carried out in an emergency

Safety rescue

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27514 (3013393)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the general safety requirements of rescue operations. The course covers the following issues: safety of emergency rescue operations and elimination of their consequences; types of responsibility for violation of safety requirements; methods of ensuring safe conditions, socio-economic issues of safety of emergency rescue, labor protection of rescuers; analysis and forecasting of risks during emergency rescue operations; formation of practical risk skills and skills safe work; determination of rational ways of the rescuer`s actions.

Purpose of studying of the discipline
Acquisition of theoretical knowledge and practical skills in the organization and safe conduct of emergency rescue operations in emergency situations.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

Postrequisites
Tactics of rescue and elimination of consequences of emergency situations Organization of rescue operations Rescue work carried out in an emergency

Examination of working conditions on production and the environment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27515 (3013394)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the issues of the organization of the examination of safety conditions, labor protection at enterprises, as well as their legal foundations. The course covers the following aspects: classification, quantitative assessment of working conditions; occupational injury, occupational diseases; methods of assessing working conditions; expert assessment of working conditions; severity, intensity of the labor process; instrumental assessment of working conditions; hygienic criteria; socio-economic standards; instruction on labor protection, deadlines passing.

Purpose of studying of the discipline
The purpose of the discipline is to gain knowledge in the field of organizing and conducting state expertise of working conditions at workplaces in organizations of any structure and form of ownership.

Learning Outcomes
ON5 Apply in practice industrially safe methods and means that exclude the impact of hazardous and harmful production factors and industrial pollution.
ON6 Possess basic knowledge and practical training in the field of technical sciences for the analysis and examination of the activities of the studied objects to safety requirements.

Prerequisites
Protection against negative factors in the technosphere The reliability of technical systems and risk management The organization and management of rescue in emergency situations

Postrequisites
Tactics of rescue and elimination of consequences of emergency situations Organization of rescue operations Rescue work carried out in an emergency

Module 5. Engineering

Logistical and logistical support

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27512 (3013396)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the planning of logistics in an emergency. The following issues are considered: assembly systems of material and technical support; the choice of a vehicle; warehousing; replenishment of excess stocks, an urgent delivery contract, the impact of material support on the performance of tasks to prevent and eliminate the consequences of emergencies; forces and means of material support, their composition and the ability to ensure and implement emergency measures; stocks of material resources, their regulation.

Purpose of studying of the discipline
The purpose of the discipline is to master theoretical knowledge and practical skills in organizing logistical support for emergency situations and civil defense both in peacetime and in wartime during the prevention and elimination of the consequences of emergency situations.

Learning Outcomes
ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites
Rescue case Facilities in extreme conditions Building construction

Postrequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Methods and means of protection in emergency situations

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27513 (3013397)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours

Knowledge control form	Examination

Short description of discipline

The discipline studies the basic principles of protection, reduction of the level of dangerous factors in emergency situations. The course covers the following issues: means of collective, individual protection; permissible impact of harmful factors on humans, the environment; the concept of the maximum permissible level of harmful factor, the principles of its construction; classification of harmful substances by type, aggregate state, nature of action; protection from chemical, biological negative factors; protection from air pollution.

Purpose of studying of the discipline

Preparation of students for creative solution of issues of management of protection of workers in emergency situations, taking into account the current legislation and regulatory legal acts. In the process of studying the discipline, students must master a systematic approach to the organization of the management of the protection of workers and employees at enterprises and organizations of all forms of ownership.

Learning Outcomes

ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites

Rescue case Facilities in extreme conditions Building construction

Postrequisites

Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Rescue equipment and basic machine

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27511 (3013395)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is based on the study of rescue equipment and basic machines, means of communication, technological capabilities of machines and provides for the following issues: rescue equipment, means of communication; search and rescue and emergency rescue equipment; road- earth tools; lifting equipment; water supply and power supply; means of small mechanization; organization of communication in emergency situations, ensuring the reliability of management; operation of short- wave, ultrashort portable radio stations.

Purpose of studying of the discipline

To consider the technical characteristics, general structure and purpose of the main types of rescue equipment and basic machines, the procedure for the use of stationary and mobile means of maintenance and repair of rescue equipment and basic machines; to indicate the main brands and characteristics of fuels and lubricants used on samples of rescue equipment and basic machines; to study the main provisions and ways of use for the organization of technical maintenance, restoration and storage of rescue equipment and basic machines.

Learning Outcomes

ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites

Rescue case Facilities in extreme conditions Building construction

Postrequisites

Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Safety engineering and technology

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27519 (3013426)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the basic definitions and concepts, requirements for the safety of equipment and technology, labor safety in the mechanization and automation of production, the safety of electric and gas welding, the safety of the operation of hoisting

and transport machines and mechanisms. The course covers: requirements for working with dangerous goods; safety requirements in the manufacture and testing of new samples; safety of transportation of people and goods by vehicles; safe operation of pressure vessels.

Purpose of studying of the discipline

Teaching students fundamental theoretical and practical training in solving organizational and managerial tasks of ensuring occupational safety, in the design of technological processes and equipment and in the process of their operation.

Learning Outcomes

ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites

Physical factors in the workplace Industrial Ventilation Production sanitation

Postrequisites

Security engineering systems and networks Process safety Foundations of PA management and safety systems of Hermetic

Safety of technological processes and equipment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27520 (3013427)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course covers: the regulatory and technical base that defines the rules for industrial safety of technological processes and equipment; supervision and control in the field of security; technological process of production, its types and essence; devices, machines and communications for carrying out technological processes; theoretical foundations and methods for studying production technology; fire hazard analysis of process equipment; fire safety of technological processes of production

Purpose of studying of the discipline

Familiarization with the safety requirements for production processes and equipment.

Learning Outcomes

ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites

Physical factors in the workplace Industrial Ventilation Production sanitation

Postrequisites

Security engineering systems and networks Process safety Foundations of PA management and safety systems of Hermetic

Manufacturing Practice II

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27517 (3013417)
Course	3
Term	2
Credits count	5
Working practice II	150hours
Total	150hours
Knowledge control form	Total mark on practice

Short description of discipline

The practice is focused on the study of general information about an industrial facility, its organizational structure, functioning features, performance indicators, safety measures. The following issues are considered: information about injuries; professional training of personnel; safety analysis of the facility; technology and technological equipment; characteristics of hazardous substances; technical solutions for safety; characteristics of safety control points; readiness of the facility for localization and emergency response; a list of regulatory documents regulating safety requirements.

Purpose of studying of the discipline

Introduction of experience and skills in organizational, technical and administrative management in production and familiarization with production technology.

Learning Outcomes

ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites

Manufacturing Practice I

Postrequisites

Production practice III

Ergonomics of production processes

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27521 (3013428)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the object of ergonomics, the role of man in the safety of the «man and machine» system, its characteristics. The course examines: the development of ergonomics and its current state; tasks and structure of ergonomics, errors, violations, failures, failures; basic methods of ergonomics; adaptation of working conditions and tools to man; ergonomic requirements for the organization of workplaces, the arrangement of machines; optimization of working movements and controls.

Purpose of studying of the discipline
Formation of economic thinking

Learning Outcomes
ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites
Physical factors in the workplace Industrial Ventilation Production sanitation

Postrequisites
Security engineering systems and networks Process safety Foundations of PA management and safety systems of Hermetic

Security engineering systems and networks

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27533 (3013398)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
When studying the discipline, the following issues are considered: engineering systems, technological complexes, networks, equipment that provide industrial enterprises with electric and thermal energy, gas, communication system; water supply of buildings, structures, consumers meeting sanitary, hygienic requirements; issues of water supply, heat supply, gas and electricity supply, ventilation, air purification of residential, public and industrial and other buildings and structures.

Purpose of studying of the discipline
Training of a specialist in obtaining theoretical knowledge on the study of the phenomena of hydraulics and thermodynamics, water supply, sanitation, heat supply, gas and electricity supply, ventilation and air conditioning, as well as sanitary and engineering equipment of various types of civil and industrial buildings.

Learning Outcomes
ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites
Safety engineering and technology Safety of technological processes and equipment Ergonomics of production processes

Postrequisites
Final examination

Process safety

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27534 (3013399)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the main regulatory and legislative acts on ensuring the safety of production processes. The following issues are considered: dangerous and harmful production factors; the concept of risk, principles, methods and means of ensuring safety; hazardous areas of technological equipment and means of protection; general safety requirements for technological equipment and production processes; labor safety during automation and mechanization of production; safety requirements for automated, mechanized flows and departments.

Purpose of studying of the discipline
To form a clear understanding of the sources of a specific danger among students, as well as a stable knowledge of methods and means of minimizing it, as well as to form knowledge among specialists about the inseparable unity of effective professional activity with the requirements for human safety and security.

Learning Outcomes
ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites
Safety engineering and technology Safety of technological processes and equipment Ergonomics of production processes

Postrequisites
Final examination

Foundations of PA management and safety systems of Hermetic

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27535 (3013400)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the state regulation of labor protection, the duties of the employer, the internal motivation of employees to work safely. The course includes the following issues: the consequences of the negative impact of working conditions on a person; guarantees of the right of workers to labor protection; organization of the occupational safety management system; development of instructions, organization of training; provision of workers with personal protective equipment; fundamentals of occupational morbidity prevention; documentation, reporting, certification.

Purpose of studying of the discipline
Formation of students` professional culture of occupational safety at work, readiness and ability to use acquired knowledge and skills to ensure occupational safety in the field of professional activity

Learning Outcomes
ON7 Assess the impact of engineering and technical complexes and technological equipment on safety conditions.

Prerequisites
Safety engineering and technology Safety of technological processes and equipment Ergonomics of production processes

Postrequisites
Final examination

Module 6. Radiation - chemical

Environmental pollution

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27496 (3013402)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the theoretical foundations of environmental protection, ensuring its quality, criteria for assessing the ecological state of the main subsystems of environmental protection by nature. The course deals with: pollution of the atmosphere, hydrosphere, lithosphere; energy pollution of the environment; protection of the atmosphere and hydrosphere from emissions and discharges of harmful substances; protection of the lithosphere from waste; protection of the environment from energy impacts.

Purpose of studying of the discipline
Formation of students` knowledge on theoretical issues of pollution and environmental protection - the basics of technologies for cleaning dust and gas emissions, liquid discharges, solid waste disposal and processing, principles of environmental protection from energy impacts necessary for making environmentally oriented decisions in various spheres of the national economy and environmental management.

Learning Outcomes
ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.

Prerequisites
Chemistry

Postrequisites
Basics of marketing and management in environmental engineering Innovative technologies to protect the environment Engineering ecology

Environmental management and geo-ecology

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	27495 (3013401)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
When studying the discipline, the following issues are considered: the purpose and objectives of the discipline; the earth as a planet, the structure of the Earth. Lithosphere, hydrosphere; geological aspects of water management; atmosphere: types of air masses, atmospheric circulation; landscape management; structure, functioning of geosystems; geology, hydrogeology. climatology, meteorology; theoretical and methodological foundations of geoecology; management of the ecological state of natural and anthropogenic geosystems; modern geoecological problems.

Purpose of studying of the discipline
Study of the basic principles and laws of rational nature management, formation of ecological culture, preparation of students for solving modern problems of nature management and nature protection.

Learning Outcomes
ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.

Prerequisites
Natural disasters

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Fundamentals of chemical, biological and radiation safety

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27524 (3013403)
Course	3
Term	2
Credits count	5
Lections	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at the classification of radiation, chemical, biological substances. The following issues are considered: technological processes using harmful chemical, biological substances and their impact on the environment; methods and methods of neutralization of harmful chemical, biological substances; legal aspects of radiation safety, methods of protection against ionizing radiation, methods of radiometric control; tactical and technical characteristics of radiation and chemical reconnaissance devices; theoretical foundations of nuclear, chemical, biological and incendiary weapons.

Purpose of studying of the discipline
Formation of students` thinking on safety priorities in solving engineering problems, study of the main aspects of ensuring chemical, biological and radiation safety of humans in settlements and work areas
Learning Outcomes
ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.
Prerequisites
Recovery, recycling and disposal of consumer waste Disposal, disposal and disposal of industrial waste Recovery technology and recycling of waste production and consumption
Postrequisites
Technical regulation of industrial safety

Radiation, chemical and biological protection

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27523 (3013404)
Course	3
Term	2
Credits count	5
Lections	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline provides for measures of radiation, chemical and biological protection, the procedure for their implementation. The following issues are covered: theoretical foundations of nuclear, chemical, biological weapons; methods of assessing the chemical state; damaging factors and measures to protect against biological weapons; tactical and technical characteristics of radiation and chemical reconnaissance devices; rules and methods of practical use of individual and collective protective equipment; medical protective equipment; evacuation.
Purpose of studying of the discipline
Theoretical and practical training of students on radiation, biological and chemical safety, ensuring safe work with ionizing radiation sources, toxic chemicals, their dosimetry and control.
Learning Outcomes
ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.
Prerequisites
Recovery, recycling and disposal of consumer waste Disposal, disposal and disposal of industrial waste Recovery technology and recycling of waste production and consumption
Postrequisites
Technical regulation of industrial safety

Fundamentals of radiation safety

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27522 (3013364)
Course	3
Term	2
Credits count	5
Lections	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at considering general ideas about radioactivity, where the following issues are studied: sources of radioactive pollution of the environment; natural radiation background; radiation hazardous objects; radiation safety standards; biological effect of ionizing radiation; methods, devices of radioactive control; protection from ionizing radiation; ensuring radiation safety when handling ionizing radiation sources; burial, processing of radioactive waste; legal aspects of radiation safety
Purpose of studying of the discipline
Theoretical and practical training of students on radiation safety, ensuring safe work with ionizing radiation sources, their dosimetry and control. The role of the discipline is to study the basics of ionizing radiation dosimetry, radiation safety and is a necessary element of modern civilization and culture.
Learning Outcomes
ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.
Prerequisites

Recovery, recycling and disposal of consumer waste Disposal, disposal and disposal of industrial waste Recovery technology and recycling of waste production and consumption

Postrequisites

Technical regulation of industrial safety

Industrial toxicology

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	27543 (3013425)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The study of the discipline is aimed at studying the basic concepts, directions and terminology of industrial toxicology. The following issues are considered: parameters and basic laws of toxicometry; fundamentals of sanitary and hygienic rationing; specifics and mechanism of toxic effect of harmful substances; toxicokinetics; possible effects of industrial poisons; basic theoretical and practical aspects of individual toxicology; antidotes. long-term effects of the poison on the human body.

Purpose of studying of the discipline

The ability to identify toxic substances, to know the characteristics and properties of toxic substances, their impact on the environment and the living organism.

Learning Outcomes

ON8 Analyze and regulate the radiation-chemical state of the working area and the environmen.

Prerequisites

Recovery, recycling and disposal of consumer waste Disposal, disposal and disposal of industrial waste Recovery technology and recycling of waste production and consumption

Postrequisites

Final examination

Module 7. The technique is safe

Examination of fire and explosion hazard of production

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27529 (3013406)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline evaluates the probability of the impact of fire, explosive factors on production personnel, the population and considers the following issues: fire and explosion prevention system; examination of fire and explosion hazard of industrial, civil facilities; assessment of fire hazard of production, fire resistance of buildings, structures; fire safety measures of facilities, assessment of fire, explosion hazard of production; fire-resistant properties of building structures; measures to determine the scale of fire; conducting rescue operations in case of fire.

Purpose of studying of the discipline

The purpose of studying this discipline is the formation of students` fundamental knowledge on the prevention of fires and explosions at industrial and civil facilities, the formation of students` system of knowledge, skills and abilities on the use of primary fire extinguishing means, the study of modern fire extinguishing means, fire protection.

Learning Outcomes

ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites

Theory of combustion and explosion Fire safety Basis of Biochymistry

Postrequisites

Final examination

Fire safety industry

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27530 (3013407)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline determines the fire, explosion hazard of flammable liquids, solids, dust and considers the following issues: assessment of the fire and explosion hazard of production; fire-resistant properties of building structures; measures to determine the scale of fire; fire barriers; fire protection of building structures; restriction of the spread of fire between buildings; protection of buildings from the spread of smoke; protection of stairwells from smoke; ensuring the safety of people when the fire.

Purpose of studying of the discipline

Formation of skills for fire hazard analysis and development of fire protection measures for modern technological processes and productions; formation of a system of knowledge about the state in which the possibility of a fire during technological processes is excluded with established probability.

Learning Outcomes

ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites

Theory of combustion and explosion Fire safety Basis of Biochymistry

Postrequisites

Final examination

Porownywania industrial and civil objects

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27531 (3013408)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the basic concepts, terms, conditions of fires of industrial and civil facilities, causes of possible explosions, assessment of the probability of fire, explosion hazard. The course covers: the flammable properties of substances, types of gorenje, fire- explosive connections, characteristics of rescue operations in case of fire, patterns and indicators of fire extinguishing, dangerous factors of the fire extinguishing process, safety measures, assessment of fire hazard of production, fire resistance of buildings, structures.

Purpose of studying of the discipline

To familiarize with a scientifically based system of knowledge of fire and explosion prevention, with situations of rapid termination and extinguishing of fires that have occurred, with legal, organizational, sanitary and technical measures to prevent fires and protect people, property of the enterprise, inventory, poultry and livestock from fire hazards. To inform students that the methods of solving the voiced tasks are certainly related to the issues of the structural features of the building and the proper use of the internal volume, technological features, properties of materials used in production.

Learning Outcomes

ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites

Theory of combustion and explosion Fire safety Basis of Biochymistry

Postrequisites

Final examination

Material and technical support of first aid

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27538 (3013410)

Course	4
Term	1
Credits count	6
Lections	30hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the planning of material and technical support for the provision of first aid, the following issues are considered: tasks of medical support of the population in an emergency situation; medical intelligence; medical protection of personnel of formations, the population conducting rescue operations in the emergency zone; carrying out sanitary and hygienic, anti- epidemic measures; equipping personnel of emergency rescue formations, the population means of medical protection, means of first aid; medical and evacuation measures; sanitary and hygienic and anti-epidemic measures.

Purpose of studying of the discipline
Acquisition by future bachelors of social work of theoretical knowledge and practical skills on the most common signs of emergency situations, first aid and prevention of life-threatening situations and emergency situations.

Learning Outcomes
ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Postrequisites
Final examination

Emergency Medicine

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27539 (3013411)
Course	4
Term	1
Credits count	6
Lections	30hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination

Short description of discipline
The discipline deals with: fundamentals of disaster medicine, medical and tactical characteristics of a peacetime emergency, damage diagnosis, methods of first aid to victims, fundamentals of epidemiology and hygiene; anatomical and physiological basis of a person; bleeding, fractures; injuries to the skull, eyes, chest, arms, legs; burns - thermal, chemical. frostbite, decrease in body temperature; heat stroke; crushing syndrome, first aid.

Purpose of studying of the discipline
Teaching students the basics of recognition and physiology of the human body, the basics of providing emergency medical care to persons injured in emergency situations of war and peacetime.

Learning Outcomes
ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites
Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Postrequisites
Final examination

Rescue work carried out in an emergency

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27542 (3013414)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline
Emergency rescue work in emergency situations of natural and man-made. Organization and management of emergency rescue and other urgent works in earthquakes, explosions, landslides, landslides, mudslides, snow avalanches, hurricanes, typhoons, tornadoes, floods, road accidents, fires, accidents at chemical hazardous facilities.

Purpose of studying of the discipline
Formation of students` system of knowledge and skills for emergency prevention, elimination and minimization of the impact on the population of hazards inherent in any region of emergency situations, as well as skills of using modern technologies of emergency response in the course of professional activity.

Learning Outcomes
ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites
Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Postrequisites
Final examination

Tactics of rescue and elimination of consequences of emergency situations

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27540 (3013412)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline studies the possibilities of the emergency rescue service for emergency situations and considers the following issues: movement of rescuers, orientation of the terrain; organization of temporary parking; orientation of the emergency zone; search for victims, release from fencing, transportation; search and rescue operations on pipeline transport, in fire conditions; search and rescue operations in the zone of radioactive damage and highly toxic substances; destruction of dangerous structures; search and rescue operations in the conditions of blockages.

Purpose of studying of the discipline
Training of specialists with high professional training, capable of carrying out rescue and other urgent work in emergency zones, which are carried out in order to save people and provide assistance to victims, localize and eliminate the consequences of emergencies and create conditions for subsequent restoration work.

Learning Outcomes
ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites
Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Postrequisites
Final examination

Organization of first aid in emergency situations

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27537 (3013409)
Course	4
Term	1
Credits count	6
Lections	30hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at measures to eliminate the medical and sanitary consequences of natural disasters, accidents and catastrophes and considers the following issues: organizational structure and tasks of the disaster medicine service, its role and place during rescue operations; structure, equipment and capabilities of medical departments; characteristics and procedure for the use of medical personal protective equipment; organization and scope of first aid medical self-help and mutual assistance at the scene.

Purpose of studying of the discipline

Organization and provision of medical assistance in emergency situations: implementation of professional training of the student to work on providing medical assistance to the population affected by emergency situations on the basis of modern recommendations in the field of civil defense, as well as training of students on theoretical and practical issues of toxicology and medical protection in emergencies, as well as in wartime.

Learning Outcomes

ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites

Safety rescue Examination of working conditions on production and the environment Security rescue operations in emergency situations

Postrequisites

Final examination

Organization of rescue operations

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27541 (3013413)
Course	4
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at organizing the professional training of rescuers and considers the following issues: the basics of organizing, managing and conducting search and rescue and other urgent work; features of rescue operations in emergency situations; basic technologies for conducting search and rescue operations; methods and methods of rescuing people in damaged and burning buildings under rubble and on the upper floors; procedure and the technology of opening bulk protective structures and rescuing people.

Purpose of studying of the discipline

Formation of students` knowledge and practical skills in the field of organization of emergency rescue operations in the liquidation of natural and man-made emergencies. The study of the discipline should contribute to the formation of students` foundations of scientific thinking in the field of protecting the population and territories from natural and man- made emergencies, as well as conducting emergency rescue, search and rescue and other urgent work in various emergency situations.

Learning Outcomes

ON9 To carry out technical and safe work to create conditions for the safety of life and protection in emergency situations.

Prerequisites

Rescue equipment and basic machine Logistical and logistical support Methods and means of protection in emergency situations

Postrequisites

Final examination

Module 8.Fundamentals of production processes

Government regulation of environmental quality

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27508 (3013421)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is focused on the goals and methods of state regulation of environmental quality with consideration of the following issues: the theoretical basis of economic rationing and the concept of environmental rationing; sanitary and hygienic and ecosystem rationing; quality standards: sanitary and hygienic, environmental, industrial and economic; air quality control; environmental and regulatory control over the implementation of environmental quality standards; geochemical aspects of environmental regulation; anthropoecological aspect of economic regulation of environmental quality.

Purpose of studying of the discipline

To familiarize students with the types of environmental activities, the system of norms and rules. regulatory documentation, design, environmental protection, rational use of natural resources, environmental safety, as well as with environmental expertise and audit.

Learning Outcomes

ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites
Environmental pollution

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Specially protected natural territories

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27510 (3013423)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline provides for the study of the following issues: biodiversity of state nature reserves and national parks of desert zones; biodiversity of state nature reserves and national parks of foothills; biodiversity of national parks of state nature reserves and steppe zones; biological diversity of wetlands; weakening of biodiversity; deterioration of flora and fauna; international cooperation; protection of wildlife in Kazakhstan; specially protected natural areas of Kazakhstan.

Purpose of studying of the discipline
Formation of ecological culture and literacy of students, awareness of the role of specially protected natural areas in solving environmental problems associated with the use of forest resources, mineral and fuel and energy resources, the consequence of which is the violation and degradation of natural ecosystems in large areas.

Learning Outcomes
ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites
Environmental pollution

Postrequisites
Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Modern ecological environmental problems

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	27509 (3013422)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
In the course of studying the discipline, the following issues are considered: general overview of environmental problems; negative impact of human activities; use of water resources and their protection; features of atmospheric air pollution; degradation and protection of soil; current state of forest ecosystems; physical pollution of the environment; environmental pollution and impact on public health; environmental problems of cities and urban settlements.

Purpose of studying of the discipline
To acquaint students with the environmental problems of our time, their causes and solutions, to form an idea of the unity of society and nature, the ways of sustainable development of civilization.

Learning Outcomes
ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science

and practice of domestic and foreign experience

Prerequisites

Environmental pollution

Postrequisites

Environmental safety of Kazakhstan Ecological safety of the environment Ecology of Kazakhstan

Occupational Safety and Health

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	27536 (3013405)
Course	4
Term	1
Credits count	6
Lections	30hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the management system and the organizational and legal foundations of labor protection, the state of occupational injuries and occupational diseases. The course covers: industrial sanitation and occupational hygiene; certification of workplaces according to working conditions; harmful substances in the air of the working area; dust; lighting; microclimate; noise and vibration; ionizing radiation; intensity and severity of work; classification of protective equipment; safety; fire and electrical safety

Purpose of studying of the discipline

Eliminate the impact of dangerous and harmful production factors on humans, ensure the safety of the production process and production equipment, optimize labor processes and the production environment.

Learning Outcomes

ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites

Physical factors in the workplace Industrial Ventilation Production sanitation

Postrequisites

Final examination

Technical regulation of industrial safety

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	27532 (3013366)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the legal, economic and social foundations of industrial safety, the content of the Law of the Republic of Kazakhstan «On Technical Regulation», the basic principles and mechanisms of technical regulation. The course deals with: the unity and binding nature of the requirements of technical regulations; requirements for the formation of an infrastructure for confirming compliance in the field of technical regulation; safety requirements for handling vehicles, pressure vessels, hot water and steam boilers, operation of process pipelines.

Purpose of studying of the discipline

Acquisition and assimilation by students of knowledge in the field of legislation on technical regulation in the Republic of Kazakhstan, approaches to the development of general and sectoral technical regulations, republican standards and standards of organizations, interaction of enterprises with public authorities.

Learning Outcomes

ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites

Safety engineering and technology Safety of technological processes and equipment Ergonomics of production processes

Postrequisites

Final examination

Externship practice

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27544 (3013365)
Course	4
Term	2
Credits count	15
Undergraduate practice	450hours
Total	450hours
Knowledge control form	Total mark on practice

Short description of discipline

The practice is aimed at studying the following issues: the nature of the activity of the enterprise-institution; the regulatory framework of the relevant branch of the economy, ensuring safe working conditions; the work of the occupational safety and health service; the organization of occupational safety, safety, possible emergencies; assessment of hazardous production factors and technical systems in an emergency conclusions and recommendations on the state of conditions safety of the facility in accordance with regulatory sanitary, organizational, technical and ergonomic requirements.

Purpose of studying of the discipline

The purpose of the pre-graduate practice is to complete the writing of the thesis (project) work

Learning Outcomes

ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites

Production practice III

Postrequisites

Final examination

Production practice III

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	27545 (3013434)
Course	4
Term	2
Credits count	15
Working practice	450hours
Total	450hours
Knowledge control form	Total mark on practice

Short description of discipline

During the internship, the following issues are studied: fire service; organizational structure and features of the functioning of the system; forces, means of the fire service; alarm, communication; actions of the services of the personnel on duty; fire investigation; description of the fire; actions of units and subdivisions of the fire service; determination of the tactics of the capabilities of units on the main fire engines; the basics of calculating forces, means, necessary for extinguishing the fire; organization of medical support in emergency situations.

Purpose of studying of the discipline

Consolidation of professional competencies and acquisition of practical skills and professional experience during the period of familiarization with production technology and organization of work of security services in emergency situations, safety of production processes and environmental safety at industrial enterprises.

Learning Outcomes

ON10 Apply in practice the knowledge of the basics of conducting production processes from the possible consequences of emergencies, accidents and catastrophes.
ON11 Analyze, evaluate and make decisions on the problems of the current state of life safety, based on the achievements of science and practice of domestic and foreign experience

Prerequisites

Manufacturing Practice II

Postrequisites

Final examination

Final examination

Writing and defending a graduation project or preparing and passing a comprehensive exam.

Diploma project

Credits count	8

Comprehensive exam

Credits count	8

4.Summary table on the scope of the educational program
«6B11201 - Safety and Environmental Protection»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Module 1. Fundamentals of social and humanitarian knowledge										
Foreign language	GER/CC	1	5	150		45		35	70	Examination
Kazakh language	GER/CC	1	5	150		45		35	70	Examination
Bases of economics, law and ecological knowledge	GER/US	1	5	150	15	30		35	70	Examination
Russian language	GER/CC	1	5	150		45		35	70	Examination
Physical Culture	GER/CC	1	2	60		60				Differentiated attestation
Foreign language	GER/CC	2	5	150		45		35	70	Examination
The module of socio-political knowledge (sociology, political science, cultural studies, psychology)	GER/CC	2	8	240	30	45		55	110	Examination
Russian language	GER/CC	2	5	150		45		35	70	Examination
Physical Culture	GER/CC	2	2	60		60				Differentiated attestation
Physical Culture	GER/CC	3	2	60		60				Differentiated attestation
World of Abai	BS/US	3	3	90	15	15		20	40	Examination
Information and communication technology	GER/CC	4	5	150	15	15	15	35	70	Examination
Physical Culture	GER/CC	4	2	60		60				Differentiated attestation
Philosophy	GER/CC	5	5	150	15	30		35	70	Examination
Module 2.Natural Science										
Mathematics	BS/US	1	5	150	15	30		35	70	Examination
Physics	BS/US	1	3	90	15	15	0	20	40	Examination
Chemistry	BS/US	3	5	150	15	15	15	35	70	Examination
Module 3. Professionally-oriented										
Introduction to the profession	BS/US	1	3	90	15	15		20	40	Examination
Natural disasters	BS/US	2	5	150	15	30		35	70	Examination
Educational practice	BS/US	2	2	60						Total mark on practice
Safety of vital functions	BS/US	3	5	150	15	30		35	70	Examination
Methods and tools for monitoring and measuring	BS/CCh	3	3	90	15	15		20	40	Examination
Methods of scientific research in life safety	BS/CCh	3	3	90	15	15		20	40	Examination
Doxologia	BS/CCh	3	5	150	15	30		35	70	Examination
Regulatory standards in the protection of the environment	BS/CCh	3	3	90	15	15		20	40	Examination

Basics of protection from the dangers	BS/CCh	3	5	150	15	30		35	70	Examination
The modern world of dangers	BS/CCh	3	5	150	15	30		35	70	Examination
Physiology and psychology of work	BS/US	6	5	150	15	30		35	70	Examination
Ecological safety of the environment	AS/CCh	6	5	150	15	30		35	70	Examination
Environmental safety of Kazakhstan	AS/CCh	6	5	150	15	30		35	70	Examination
Ecology of Kazakhstan	AS/CCh	6	5	150	15	30		35	70	Examination
Module 4. Industrial-safe										
Basis of Biochymistry	BS/CCh	3	5	150	15	30		35	70	Examination
Fire safety	BS/CCh	3	5	150	15	30		35	70	Examination
Theory of combustion and explosion	BS/CCh	3	5	150	15	30		35	70	Examination
Rescue case	BS/CCh	4	5	150	15	30		35	70	Examination
Manufacturing Practice I	BS/US	4	5	150						Total mark on practice
Facilities in extreme conditions	BS/CCh	4	5	150	15	30		35	70	Examination
Building construction	BS/CCh	4	5	150	15	30		35	70	Examination
Recovery technology and recycling of waste production and consumption	BS/CCh	4	5	150	15	30		35	70	Examination
Disposal, disposal and disposal of industrial waste	BS/CCh	4	5	150	15	30		35	70	Examination
Recovery, recycling and disposal of consumer waste	BS/CCh	4	5	150	15	30		35	70	Examination
Engineering ecology	BS/CCh	5	5	150	15	30		35	70	Examination
Innovative technologies to protect the environment	BS/CCh	5	5	150	15	30		35	70	Examination
The reliability of technical systems and risk management	BS/CCh	5	5	150	15	30		35	70	Examination
The organization and management of rescue in emergency situations	BS/CCh	5	5	150	15	30		35	70	Examination
Basics of marketing and management in environmental engineering	BS/CCh	5	5	150	15	30		35	70	Examination
Production sanitation	BS/CCh	5	5	150	15	30		35	70	Examination
Industrial Ventilation	BS/CCh	5	5	150	15	30		35	70	Examination
Protection against negative factors in the technosphere	BS/CCh	5	5	150	15	30		35	70	Examination
Physical factors in the workplace	BS/CCh	5	5	150	15	30		35	70	Examination
Security rescue operations in emergency situations	BS/CCh	6	5	150	15	30		35	70	Examination
Safety rescue	BS/CCh	6	5	150	15	30		35	70	Examination
Examination of working conditions on production and the environment	BS/CCh	6	5	150	15	30		35	70	Examination
Module 5. Engineering										
Logistical and logistical support	AS/CCh	5	5	150	15	30		35	70	Examination
Methods and means of protection in emergency situations	AS/CCh	5	5	150	15	30		35	70	Examination
Rescue equipment and basic machine	AS/CCh	5	5	150	15	30		35	70	Examination
Safety engineering and technology	BS/CCh	6	5	150	15	30		35	70	Examination

Safety of technological processes and equipment	BS/CCh	6	5	150	15	30		35	70	Examination
Manufacturing Practice II	BS/US	6	5	150						Total mark on practice
Ergonomics of production processes	BS/CCh	6	5	150	15	30		35	70	Examination
Security engineering systems and networks	AS/CCh	7	5	150	15	30		35	70	Examination
Process safety	AS/CCh	7	5	150	15	30		35	70	Examination
Foundations of PA management and safety systems of Hermetic	AS/CCh	7	5	150	15	30		35	70	Examination
Module 6. Radiation - chemical										
Environmental pollution	BS/US	4	5	150	15	30		35	70	Examination
Environmental management and geo-ecology	BS/US	4	5	150	15	30		35	70	Examination
Fundamentals of chemical, biological and radiation safety	AS/CCh	6	5	150	15		30	35	70	Examination
Radiation, chemical and biological protection	AS/CCh	6	5	150	15		30	35	70	Examination
Fundamentals of radiation safety	AS/CCh	6	5	150	15		30	35	70	Examination
Industrial toxicology	AS/US	7	5	150	15	30		35	70	Examination
Module 7. The technique is safe										
Examination of fire and explosion hazard of production	BS/CCh	7	5	150	30	15		35	70	Examination
Fire safety industry	BS/CCh	7	5	150	30	15		35	70	Examination
Porownywania industrial and civil objects	BS/CCh	7	5	150	30	15		35	70	Examination
Material and technical support of first aid	AS/CCh	7	6	180	30	30		40	80	Examination
Emergency Medicine	AS/CCh	7	6	180	30	30		40	80	Examination
Rescue work carried out in an emergency	AS/CCh	7	5	150	30	15		35	70	Examination
Tactics of rescue and elimination of consequences of emergency situations	AS/CCh	7	5	150	30	15		35	70	Examination
Organization of first aid in emergency situations	AS/CCh	7	6	180	30	30		40	80	Examination
Organization of rescue operations	AS/CCh	7	5	150	30	15		35	70	Examination
Module 8.Fundamentals of production processes										
Government regulation of environmental quality	BS/CCh	5	5	150	15	30		35	70	Examination
Specially protected natural territories	BS/CCh	5	5	150	15	30		35	70	Examination
Modern ecological environmental problems	BS/CCh	5	5	150	15	30		35	70	Examination
Occupational Safety and Health	AS/US	7	6	180	30	30		40	80	Examination
Technical regulation of industrial safety	AS/US	7	5	150	15	30		35	70	Examination
Externship practice	AS/CCh	8	15	450						Total mark on practice
Production practice III	AS/CCh	8	15	450						Total mark on practice
Final examination										
Diploma project		8	8	240						

Comprehensive exam		8	8	240						