



SYLLABUS “LIFE SAFETY”

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Department responsible for the course or equivalent: Institute of Management in Economic, Ecological and Social Systems; Department of ecology and life safety.

Semester when the course unit is delivered: 3rd

Level of course unit: Bachelor level

ECTS credits: 2

ADMISSION REQUIREMENTS

Applicants are expected to have completed the following courses:

- Health culture.

COURSE OBJECTIVES (AIMS)

- understanding issues of sustainable development, ensuring life safety and reducing risks associated with human activities;
- mastering the techniques of rationalization of life activities aimed at reducing the anthropogenic impact on the natural environment and ensuring the safety of individuals and society;
- formation of a culture of safety, environmental awareness and risk-oriented thinking, in which issues of safety and environmental conservation are considered as the most important priorities of human life;
- formation of a culture of professional safety, the ability to identify hazards and assess risks in the field of their professional activities;
- formation of readiness to apply professional knowledge to minimize negative environmental consequences, ensure safety and improve working conditions in the sphere of their professional activities;
- formation of motivation and abilities for self-improvement of the level of safety culture;
- develop the ability to assess the contribution of your subject area to environmental and safety issues;
- formation of abilities for reasoned justification of their decisions from the point of view of security.

Session 1. Theoretical foundations of the Life safety. Identification and impact on humans of harmful and dangerous environmental factors



- Characteristic of the system "man - environment". Industrial, urban, household, and natural environment. Human interaction with the environment. The concepts of "danger" and "safety".
- Types of hazards: natural, anthropogenic, man-made, global. Environmental, industrial, industrial safety, fire, radiation, transport, economic, food and information security as components of national security. Harm, damage, risk-types and characteristics. Emergencies-concept, main types. Security and sustainable development. Security as one of the main human needs.
- The importance of security in the modern world. Causes of danger. The role of the human factor in the reasons for the implementation of hazards. Axioms of life safety. Post-industrial society as a risk society.
- The concept of a risk society. The importance of security competencies for ensuring sustainable development of society. Security and demographics. The place and role of security in the subject area and professional activity.
- The current state of the technosphere and technosphere security. Criteria and parameters of safety of the technosphere. Types and sources of the main hazards of the technosphere and its individual components.
- Classification of negative factors of natural, anthropogenic and technogenic origin. Harmful and dangerous negative factors. Systems of perception and compensation of harmful environmental factors by the human body.
- Maximum permissible levels of dangerous and harmful factors – the main types and principles of establishment. Parameters and characteristics of the main harmful and dangerous factors of the human environment, the main components of the technosphere and their sources. The impact of the main negative factors on a person and their maximum permissible levels. Legislative and regulatory framework for life safety management.
- Systems of legislative and regulatory acts regulating issues of environmental, industrial, industrial safety and security in emergency situations, civil defense. Characteristics of the main legislative and regulatory acts: purpose, objects of regulation and main provisions. Economic fundamentals of security management.
- Modern market methods of economic regulation of various aspects of security: positive and negative methods of stimulating security. The concept of economic damage, its components and methodological approaches to assessment.
- Material liability for violation of environmental, industrial and industrial safety requirements. Risk insurance: environmental insurance, liability insurance for owners of hazardous production facilities, occupational risk insurance, social insurance
- Basic concepts, functions, tasks and principles of risk insurance. State security management bodies: security management, supervision and control bodies, their main functions, rights and responsibilities, and structure. The system of RSChS and civil defense.

Session 2. Protection of human and environment from harmful and dangerous factors of natural, anthropogenic and technogenic origin



- Basic principles of protection from hazards. Systems and methods for protecting people and the environment from the main types of dangerous and harmful effects of natural, anthropogenic and technogenic origin.
- Methods of protection against harmful substances, physical fields, information flows, and biological and psychological hazards.
- General characteristics and classification of protective equipment.
- Methods of control and monitoring of dangerous and harmful factors. Basic principles and stages of monitoring and forecasting.
- Methods for determining the zones of negative factors and their levels.

Session 3. Providing comfortable conditions for human life and activity

- The physiological and ergonomic basis of the security. The relationship of living conditions with health and productivity.
- Comfortable (optimal) living conditions. Climate, air, light, acoustic and psychological environments, the influence of the environment on the well-being, health and performance of a person.
- Psychophysiological and ergonomic conditions of labor organization and safety. Principles, methods and means of organizing comfortable living conditions. Mental processes, properties, and States that affect safety.
- Mental processes, mental properties, and mental States that affect safety. The main psychological reasons for mistakes and creating dangerous situations. Types and conditions of employment.
- Types of work: physical and mental work, forms of physical and mental work, creative work.
- Classification of working conditions by severity and intensity of the labor process.
- Classification of working conditions by factors of the production environment.
- Ergonomic safety basics. Ergonomics as the science of proper organization of human activity, compliance of labor with the physiological and mental capabilities of a person, ensuring effective work that does not pose a threat to human health.

Session 4. Emergency situations and methods of protection in the conditions of their implementation

- First aid techniques. Basic concepts and definitions, classification of emergencies and economic objects by potential hazard.
- The phase of development of emergency situations. Striking factors of sources of man-made emergencies.
- Classification of natural disasters(natural disasters), man-made accidents. Characterization of factors affecting emergency situations of natural character.
- Man-made accidents – their features and striking factors.
- Emergencies of peace and war and their striking factors. Types of weapons of mass destruction, their features and consequences of their use. Terrorism and terrorist actions.
- Methods of forecasting and assessing the situation in emergency situations. Stability of functioning of economic objects in emergency



situations. • Principles and methods for improving the stability of facilities in emergency situations. • Fundamentals of the organization of protection of the population and personnel in peacetime and wartime, methods of protection, protective structures, their classification. • Organization of evacuation of the population and personnel from emergency zones. • Medical care events. Personal protective equipment and how to use it. • Fundamentals of organization of emergency rescue and other emergency operations in emergency situations.

LEARNING OUTCOMES

Knowledge:

- main hazards, their properties and characteristics;
- the nature of the impact of harmful and dangerous factors on humans and the natural environment, methods of protection against them in relation to the sphere of their professional activities;
- first aid techniques, methods of protection in emergency situations.

Skills:

- identify the main hazards of the human environment, assess the risk of their implementation;
- choose methods of protection from hazards in relation to the sphere of their professional activities and ways to ensure comfortable living conditions;
- be able to apply first aid techniques and methods of protection in emergency situations.

Learning Outcomes:

- legislative and legal acts in the field of safety and environmental protection;
- requirements for the safety of technical regulations in the field of professional activity;
- methods and technologies of protection in emergency situations;
- skills to rationalize professional activities in order to ensure safety and protect the environment.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

In the implementation of the discipline "life Safety", various educational technologies are used, taking into account the introduction of innovative methods and methods of teaching while using traditional methods. Conducting lectures and practical classes is carried out with the statement of problematic issues that



allow the emergence of discussions, which implies the active involvement of students in the educational process.

The lecture course contains theoretical material that reflects the current state of scientific concepts on this topic and is supported by explanations and comments on specific application examples of implementation. During the lecture session, students listen to the teacher, ask questions, and take notes on some of the information. At the same time, computer, projection technology and presentations are actively used, which focus the audience's attention on the key points of the lecture material and focus on a consistent presentation of the material when analyzing specific situations of a problematic nature.

Practical classes on the course include elements of an interactive problem-oriented approach to learning by focusing students' attention on the analysis and resolution of specific tasks.

Independent work is aimed at developing an understanding of the application of the materials considered in the framework of the theoretical course in the practical aspect when solving professional tasks.

Independent work is mainly carried out by studying lectures (includes preparation for tests) and preparing for practical classes (includes preparation for test tasks and project tasks).

The final control of material assimilation is carried out in the form of a credit at the end of the semester.

Forms of current control of progress: control papers, test tasks. Forms of boundary control of academic performance: project tasks. Form of interim certification: the competition.

ASSESSMENT METHODS AND CRITERIA

Criteria for evaluation:

Test

- 5 points are awarded to the student if they answer 10 questions correctly;
- 4 points are awarded to the student if they correctly answer 8-9 questions;
- 4 points are awarded to the student if they correctly answer 6-7 questions;
- 3 points are awarded to the student if they correctly answer 1-5 questions;

I module: 4 tests with 5 points (20 points)



Module II: 4 tests with 5 points (20 points)

A student scores 40 points per semester.

Control papers

- 5 points are awarded to the student if he / she correctly presents the material in writing, demonstrates the assimilation of the entire volume of knowledge, skills and abilities in accordance with the program, and freely applies the knowledge obtained in practice;
- 4 points are awarded to the student if they demonstrate the assimilation of the program material and allow inaccuracies in the answers;
- 3 points are awarded to the student if they demonstrate knowledge of the program material, but make mistakes in the answers;
- 1-2 points are awarded to the student if they have separate ideas about the material and make gross mistakes in their answers.

I module: 2 test papers with 5 points (10 points)

Module II: 2 test papers with 5 points (10 points)

A student scores 20 points per semester.

Project specification

- 20 points are awarded to the student if they completed all the calculation tasks correctly, drew graphs and made the necessary conclusions;
- 17-19 points are awarded to the student if they made 1-2 minor mistakes in the calculation tasks, drew graphs, and made the necessary conclusions;
- 12-16 points are awarded to the student if they made 3-4 mistakes in the calculation tasks, drew graphs, and made inaccurate conclusions.

Less than 12 points for the work is not issued, it is sent to the student for revision, taking into account the noted errors to bring the work into compliance with the requirements.

Module I: first part of the project task (assessment of the radiation situation) (20 points)

Module II: second part of the project task (assessment of the chemical environment) (20 points)



A student scores 40 points per semester.

COURSE LITERATURE (RECOMMENDED OR REQUIRED)

1. Kamenskaya E. N. life Safety and risk management [Text]: Textbook / - M.: IC RIOR, SIC INFRA-M, 2019. - 252 p. [Electronic resource] - URL: <https://znanium.com/catalog/product/541962>
2. Ploskin V. life Safety. 2 / V. V. Ploskin-Moscow / Berlin: Direct Media, 2015. - 404 p. [Electronic resource] - URL: <http://biblioclub.ru/index.php?page=book&id=271483>
3. Life safety: natural and technogenic factors: Textbook / Alekseyenko Vladimir Alekseevich-Rostov n/ A: Phoenix, 2016. - 270 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800392714/>
4. Psychological security of the individual and human behavior in an emergency: Textbook / Kamenskaya Elena Nikolaevna, 2017. - 97 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800756866/>
5. Belov S. V. life Safety and environmental protection (technosphere safety) [Text]: textbook for students. Moscow: yurait, 2010. - 672 p.
6. Life safety / E. F. Baranov-Moscow: Altair / MGAVT, 2014. - 164 p. [Electronic resource] - URL: <http://biblioclub.ru/index.php?page=book&id=430026>
7. Kamenskaya E. N. Psychophysiological and ergonomic bases of safety [Text]: textbook / Kamenskaya E. N.; southern Federal University. – Taganrog: Publishing house of southern Federal University, 2019. - 117 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800919188/>
8. Kamenskaya E. N. Safety and risk management in the technosphere [Text]: textbook / Kamenskaya E. N.; southern Federal University. – Taganrog: Publishing house of southern Federal University, 2018. - 102 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800819826/>
9. Kamenskaya E. N., Svirepova M. S. Chemical negative factors in the system "man-environment" [Text]: textbook on the course "Safety of life". - Taganrog: SFU Publishing house, 2016. - 83 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800768199/>
10. Kamenskaya E. N. Emergencies of a social nature [Text]: textbook on the course "Safety of life". - Taganrog: SFU Publishing house, 2016. - 80 p. [Electronic resource] - URL: <https://hub.lib.sfedu.ru/repository/material/800768198/>