

*Federal state autonomous educational institution of higher professional education  
“People’s Friendship University of Russia”*

Faculty of ecology  
Recommended by MSSN

## **DISCIPLINE PROGRAM**

**Title of the discipline** Human ecology and hygiene of environment

**Recommended for the direction of training / specialty**

**05.06.01 Earth Sciences**

**Direction of the program (profile)**

**Ecology: modern environmental studies**

**1. Task** to learn the basic idea of interrelations between humans and environment and negative environmental factors impact on security systems of human organism.

**.Objectives**

- 1) to learn main principles of interrelations between humans and environment;
- 2) to define the negative environmental factors which influence on human organism;
- 3) to analyze the reference literature, directive and requirements documents for working population health maintenance measures;
- 4) to recognize life threatening conditions, traumas and some of the nosological entities;
- 5) to consider the algorithms of competent activities in specific situations of auto accident, electric trauma, toxication, strangulation and so on
- 6) to learn the ways of collective and individual protection from occupational hazards.

**2. Place of the discipline in the structure of the Concentration program:**

Mathematical and natural cycle. The PhD student should know the basics of general ecology, biology, human anatomy and physiology, be able to identify the main anatomical and structural and functional unit of the human body, possess conceptual and terminological apparatus of Biological Sciences. This discipline is the final in a series of Human Ecology

Table 1 shows the previous and subsequent disciplines aimed at the formation of discipline competencies in accordance with the competence matrix of EP HE.

Table No. 1

**Prior and subsequent disciplines aimed at the formation of competencies**

№ п/п	Code and name of competence	Preceding disciplines	Subsequent disciplines (groups of disciplines)
<b>General professional competencies</b>			
	GPC-1	Methodology of scientific research	preparation of the thesis
	GPC-2	Pedagogics of higher school	Teaching practice
<b>Basic competencies</b>			
	BC-2	History and philosophy of science	preparation of the thesis
	BC-3	Foreign language	
<b>Профессиональные компетенции</b>			
	PC-1	Pedagogics of higher school	Teaching practice
	PC-4	Methodology of scientific research	preparation of the thesis

**3. Requirements for the results of the examination of the discipline:**

The process of studying the discipline is aimed at the formation of the following competencies:

GPC-1; GPC-2; PC-2; PC-3; BC-1; BC-2; BC-3; BC-5

General professional competencies

Ability to realize the self-directed research activity	GPC-1
Readiness to teaching activity on the field of higher education educational programs	GPC-2

<b>Basic competencies</b>		
Ability to the stocktaking and present-day scientific achievement evaluation, modern ideas generation in solving investigative and practical tasks, including cross-disciplinary fields		BC-1
Ability to project and realize complex studies, including cross-disciplinary, based on the integral systematic scientific world outlook by the aid of History and Philosophy of Science knowledge		BC-2
Readiness to take part in the Russian and international study personnel scientific missions resolution.		BC-3
Ability to plan and solve the tasks of professional and personal enhancement		BC-5
		PC-1
To be able to diagnose issues of environmental protection, to make the impact assessment of building projects and other forms of anthropogenic activities to give recommendations on nature preserving and sustainable development maintenance.		PC -2
To be able to make analysis and assessment of nature influence on health and human livelihood		PC -3

As a result of studying the discipline PhD student must:

**know** the basic principles of human relationship with the environment; negative factors of environment affects the human body;

**be able to** use legal documents in their activities; To adopt reference books, guidelines and regulations for the organization of activities, aimed at the preservation of health, prevention of injuries;

**Be familiar with** basic methods of industrial workers protection and the public from the possible consequences of accidents, catastrophes and natural disasters; skills to use standard specifications for the implementation of safety requirements, rules of health protection and observance of healthy life-style.

#### 4. The volume of disciplines and types of training work

Total labor discipline is 4 credits.

Type of study	Hours	Semesters			
Class hours (total)	60	3			
<i>Including:</i>	-	-	-	-	-
Lectures	20	20			
Practical training	40	40			
Seminars					
Laboratory works					
Independent work (total)	64	64			
Credit system	час	144	144		
	зач. ед.	4	4		

#### 5. Contents

##### 5.1. Contents sections

№ п/п	The title of the discipline section	In This section

1.	Topic 1	Introduction. basic idea of interrelations between humans and environment Properties of teaching Human ecology and hygiene of environment in Higher school.
2.	Topic 2	Sanitary audit of environmental pollution.
3.	Topic 3	Human health and environment. Maternal and child health.
4.	Topic 4	Public health record. Sick rate. Health impact factors.
5.	Topic 5	Pollution-related diseases
6.	Topic 6	Air pollution impact on human health.
7.	Topic 7	Noise pollution.
8.	Topic 8	Negative environmental factors impact on security systems of human organism.
9.	Topic 9	Air pollution
10.	Topic 10	Water pollution
11.	Topic 11	Soil pollution
12.	Topic 12	Perception and compensatory systems from negative external conditions.
13.	Topic 13	Joint action of negative factors.
14.	Topic 14	Hazardous and harmful factors affect on humans and main principles of normalization.
15.	Topic 15	Principles of standard-setting
16.	Topic 16	Maximum permissible level principles, physical criterion and principles of standard-setting.
147.	Topic 17	Natural systems of human organism security providing.
18.	Topic 18	Adaptation and homeostasis.
19.	Topic 19	Psychological security systems
20.	Topic 20	

## 5.2. Sections of disciplines and occupations

№ п/п	Sections of disciplines and occupations	lec- tions	PT	LW	Semi- nars	IW	hours
1.	Introduction. basic idea of interrelations between humans and environment Properties of teaching Human ecology and hygiene of environment in Higher school.	1	2	0		3	6
2.	Sanitary audit of environmental pollution.	1	2	0		3	6
3	Human health and environment. Maternal and child health.	1	2	0		3	6
4	Public health record. Sick rate.	1	2	0		3	6
5	Health impact factors.	1	2	0		3	6
6	Pollution-related diseases	1	2	0		3	6
7	Air pollution impact on human health.	1	2	0		3	6
8	Noise pollution.	1	2	0		3	6
9	Negative environmental factors impact on security systems of human organism.	1	2	0		3	6
10	Air pollution	1	2			3	6
11	Water pollution	1	2			3	6
12	Soil pollution	1	2			3	6
13	Perception and compensatory systems from negative external conditions.	1	2			4	7
14	Joint action of negative factors.	1	2			4	7
15	Hazardous and harmful factors affect on humans and main principles of normalization.	1	2			3	6
16	Principles of standard-setting	1	2			3	6
17	Maximum permissible level principles, physical criterion and principles of standard-setting.	1	2			3	6
18	Natural systems of human organism security providing.	1	2			4	7
19	Adaptation and homeostasis.	1	2			4	7
20	Psychological security systems	1	2			3	6
		20	40			64	144

## 6. Practical trainings (seminars)

### Seminars

№ п/п	Sections of disci- plines and oc- cupa- tions	In This section	Hours
1.	1.	Hygienic evaluation of environmental pollution: air, water, soil, waste.	2
2.	2.	Tasks to evaluate atmospheric pollution	1
3.	3.	Tasks of water pollution assessment of cultural and household sources	1
4.	4.	Tasks to soil contamination assessment settlements	1
5.	5.	Public health and the environment. Maternal and child.	1
6.	6.	Health workers in various sectors of the economy	1
7.	7.	Solving problems on the severity of the labor process	1
8.	8.	Solving problems on the labor intensity of the process	1
9.	9.	Problem solving Review of accidents at work	1
10	10.	The impact of air pollution on human health.	1
11	11.	Solving problems by the accumulation of pollution on the food chain.	1
12	12.	Acute and chronic poisoning (industrial and household). Signs, prevention, first aid	1
13	13.	The impact of heavy metals on the human body	1
14	14.	Microelementoses, vitamin and mineral imbalance	1
15	15.	<i>landmark certification</i>	1
16	16.	Noise pollution	1
17	17.	Characteristics of the acoustic environment of a megacity. Solving problems on noise pollution of different districts of Moscow	1
18	18.	Chemical water pollution.	2
19	19.	Microbiological contamination of the water.	2
20	20.	Analyzers. Properties of analyzers.	2
21	21.	The work of the visual analyzer. videoecology bases.	2
22	22.	The work of the auditory analyzer.	2
23	23.	Non-specific adaptation reactions. Special adaptation reaction.	2
24	24.	Psychological defense system of the body.	2
25	25.	Toxicants in the environment.	2
26	26.	Interaction hazards	2
27	27.	The principles establish the remote control harmful and dangerous factors, the physical criteria and principles established norms.	2
28	28.	Decision and preparation of case studies on the studied topics	2

### 5.3. Sections of disciplines and occupations

№ п/п	Sections of disciplines	Lec- tions	Practical training and laboratory works			Inde- pen- dent work	to- tal
			Pra- cti- cal wor- k and sem- in- ars	Lab wor- ks	inter- active		
1.	Introduction. basic idea of interrelations between humans and environment Properties of teaching Human ecology and hygiene of environment in Higher school.	2				2	
2.	Sanitary audit of environmental pollution.		1			1	

3.	The tasks to evaluate atmospheric pollution		1			1
4.	Solving problems of water pollution assessment of cultural and household sources		1			1
5.	Problem Solving: Assessment of contaminated soil settlements. Simulation of emergencies		1		1	1
6.	Public health and the environment. Maternal and child. Indicators of population health. The overall incidence.	2				2
7.	Public health and the environment. Maternal and child.		1			1
8.	Health workers in various sectors of the economy		1			1
9.	Solving problems on the severity of the labor process		1			1
10.	Solving problems on the labor intensity of the process		1			1
11.	Problem solving Review of accidents at work		1			1
12.	Factors influencing health. Diseases associated with environmental pollution. The impact of air pollution on human health. Noise pollution.	4				4
13.	The impact of air pollution on human health.		1			1
14.	Solving problems by the accumulation of pollution on the food chain.		1			1
15.	Acute and chronic poisoning (industrial and household). Signs, prevention, first aid		1			1
16.	The impact of heavy metals on the human body		1			1
17.	The impact of negative environmental factors on the safety systems of the human body.	1				1
18.	Microelementoses, vitamin and mineral imbalance		1			1
19.	landmark certification		2			2
20.	Air pollution	1				1
21.	Water pollution	1				1
22.	Soil pollution	1				1
23.	Noise pollution. Characteristics of the acoustic environment of a megacity. Solving problems on noise pollution of various districts of Moscow. Simulation of emergencies		2		2	2
24.	Chemical water pollution. Microbiological contamination of the water. Simulation of emergencies		2		2	2
25.	Analyzers. Properties of analyzers.		1			1
26.	The work of the visual analyzer. Fundamentals of radioecology. The work of the auditory analyzer.		2			2
27.	Systems of perception and compensation for adverse external environmental conditions.	1				1
28.	Non-specific adaptation reactions.		1			1
29.	The specific adaptation reactions.		1			1
30.	Psychological defense system of the body. Simulation of emergencies		1		1	1
31.	Toxicants in the environment.		1			1
	Joint action of negative factors.	1				1
32.	Joint action of negative factors. Simulation of emergencies		1		1	1
33.	The impact of hazardous and harmful factors on human principles and the establishment of norms. The objectives and principles of valuation. The principles establish the remote control harmful and dangerous factors, the physical criteria and principles established norms.	3				3
34.	The principles establish the remote control harmful and dangerous factors, the physical criteria and principles established norms.		1			1
35.	Natural systems provide protection of the human body.	1	1			1
36.	Adaptation and homeostasis.	1	1			1
37.	Psychological defense system of the body.	1	1			1
38.	Decision and preparation of case studies on the topics studied. Simulation of emergencies		1		1	1

39.	Independent study material and modeling of emergency situations		1		8		8
40.	Preparation and passing intermediate certification		1			30	30
41.	Preparation for seminars					64	56
42.	<b>Total</b>	<b>20</b>	<b>40</b>		<b>40</b>		<b>144</b>

### 8. Material and technical support of the discipline:

№ п/п	Object name	Quantity
1.	hygrometer psychometric	6
2.	illuminometer	2
3.	pH meter	6
4.	Libra	1
5.	Glassware	According to the number of students
6.	Measuring blood pressure	15
7.	Stopwatch	4
8.	dry spirometer	10
9.	Dynamometer	6
10.	GDV Camera PRO	1
11.	APK "Psychophysiology"	10

### 9. Information support of the discipline

[www.e-library.ru](http://www.e-library.ru)

[www.science-direct.com](http://www.science-direct.com)

[www.google.ru](http://www.google.ru)

### 9. The educational-methodical and informational support of the discipline:

#### a) Main literature

- 1) Emilia Kolarzyk Selected topics on hygiene and human ecology <http://www.e-nujag.cm-uj.krakow.pl/materialy/higienna/main.pdf>
- 2) The ecology and inter-relationship between housing and health outcomes Gary Garner Paper delivered to the International Conference on Infrastructure Development and the Environment (Iciden-Abuja 2006). <http://eprints.qut.edu.au/7216/1/7216.pdf>
- 3) International Journal of Hygiene and Environmental Health <http://www.journals.elsevier.com/international-journal-of-hygiene-and-environmental-health>
- 4) OCCUPATIONAL SAFETY AND HEALTH CENTER DEPARTMENT OF LABOR AND EMPLOYMENT Intramuros, Manila February 2005-May 2013 [http://www.oshc.dole.gov.ph/UserFiles/oshc2010/file/OSH\\_Standards\\_Amended\\_1989\\_Latest.pdf](http://www.oshc.dole.gov.ph/UserFiles/oshc2010/file/OSH_Standards_Amended_1989_Latest.pdf)
- 5) GUIDE FOR THE CLASS NOTATION GREEN PASSPORT (GP) American Bureau of Shipping [https://www.eagle.org/eagleExternalPortalWEB/ShowProperty/BEA%20Repository/Rules&Guides/Current/158\\_GreenPassport/GreenPassportGuide](https://www.eagle.org/eagleExternalPortalWEB/ShowProperty/BEA%20Repository/Rules&Guides/Current/158_GreenPassport/GreenPassportGuide)
- 6) Principles of Physiological Regulation of the Body Functions in Incomplete Adaptation S. G. Krivoshchekov, G. M. Divert <http://link.springer.com/article/10.1023/A:1007175828371>
- 7) Effect of Altitude on the Heart and the Lungs Peter Bärtsch and J. Simon R. Gibbs <http://circ.ahajournals.org/content/116/19/2191>
- 8) The concept of adaptation : interdisciplinary scope and involvement in climate change **Guillaume Simonet** <https://sapiens.revues.org/997>
- 9) What Are the Limits of Human Survival? By Natalie Wolchove <http://www.livescience.com/34128-limits-human-survival.html>
- 10) The Biology of Human Survival: Life and Death in Extreme Environments : Claude A. Piantadosi

[4XU5m28C&pg=PA1&lpg=PA1&dq=Human+survival+in+extreme+conditions&source=bl&ots=j8fL6tZo-F&sig=ZmSSWKHQIaKRGdjnT80Gv0nEX1I&hl=ru&sa=X&ved=0ahUKEwje6cjTt5LPAhWF2SwKHcEkB5c4ChDoAQgqMAM#v=onepage&q=Human%20survival%20in%20extreme%20conditions&f=false](https://www.google.com/search?q=Human+survival+in+extreme+conditions&source=bl&ots=j8fL6tZo-F&sig=ZmSSWKHQIaKRGdjnT80Gv0nEX1I&hl=ru&sa=X&ved=0ahUKEwje6cjTt5LPAhWF2SwKHcEkB5c4ChDoAQgqMAM#v=onepage&q=Human%20survival%20in%20extreme%20conditions&f=false)

### 11. Methodical instructions for students on mastering the discipline (module)

The maximum number of credits in the study course - 4. At the same time between the if-honors points and the number of credits is established the following relationship:

The total amount of points	The total amount of points	Credit
91	5	3
91-100	5	3
86 - 91	5 (B)	3
71-85	4 (C)	2
61-70	3+ (D)	1
51 - 60	3 (E)	1
21 - 51	2 (FX)	0
<21	2 (F)	0

### 12. Fund of assessment tools for intermediate certification of students in the discipline (module)

Materials for assessing the level of mastering the educational material of the discipline "Human ecology and hygiene of environment" (evaluation materials), including a list of competencies indicating the stages of their formation, a description of indicators and criteria for evaluating competencies at various stages of their formation, a description of the assessment scales, typical control tasks or other materials necessary to assess knowledge, skills, skills and (or) experience of activity, characterizing the stages of the formation of competencies in the process of mastering the educational program, methodological materials that determine the procedures for assessing knowledge, skills, skills and (or) experience of activities that characterize the stages of the formation of competencies are developed in full and are available for students on the discipline page at TUIS RUDN.

The program has been drawn up in accordance with the requirements of the ES of HE RUDN University.

#### Developer:

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