

Документ подписан простой электронной подписью

Информация о владельце:

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MINISTRY OF SCIENCE AND HIGHER EDUCATION

RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education

NORTH-CAUCASUS FEDERAL UNIVERSITY

APPROVED

Assoc. Prof. Kubanov S.I.

PhD in Medical Sciences

Dean

Faculty of Medicine and Biology

ASSESSMENT TOOLS FUND FOR THE DISCIPLINE

Human Ecology

Name of the discipline (module)

- Specialty: 31.05.01 General Medicine
- Mode of training: Full-time
- Year of commencement of studies: 2026
- Delivered in Semester 5

Introduction

1. Intended for carrying out current control of academic performance progress and intermediate attestation in the discipline of Human Ecology for students of the specialty (majoring in) 31.05.01 General Medicine.
2. The ATF is an appendix to the program of the discipline (module) Human Ecology
3. Developer(s): Kharin K.V., Head of department of ecology and biogeography
4. Expert examination of the ATF has been completed.

Expert group:

Chairperson: Evgenia Vladimirovna Denisova, Candidate of Biological Sciences, Associate Professor

Gleb Sergeevich Ivchenko, Candidate of Medical Sciences

Employer organization representative: Vilensky I.L., Chief Physician of Independent CDL, LLC

Expert conclusion – the ATF allows evaluating the level of competency levels and is recommended to be employed in the educational process.

5. The validity period for the ATF shall be determined by the period of implementation of the educational program.

1. Description of Evaluation Criteria at Various Stages of Their Formation, Description of Evaluation Scales

Levels of formation of competence(s), indicator(s)	Descriptors			
	Minimum level not achieved (Unsatisfactory) 2 points	Minimum level (Satisfactory) 3 points	Intermediate level (Good) 4 points	High level (Excellent) 5 points
Competency GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.				
Learning outcomes for the discipline (module): <i>Indicator:</i> AI-1 GPC-2. Uses various techniques and methods to disseminate knowledge about a healthy lifestyle and sanitary-hygienic education of the population.	Does not use various techniques or methods	Uses various techniques and methods.	Uses various techniques and methods to disseminate knowledge about a healthy lifestyle.	Uses various techniques and methods to disseminate knowledge about a healthy lifestyle and to provide sanitary and hygiene education to the population.
AI-2 GPC-2. Demonstrates the ability to determine priority problems and health risks of the patient (population).	Does not demonstrate the ability	Demonstrates ability	Demonstrates the ability to identify priority issues.	Demonstrates the ability to identify priority health issues and risks for the patient (or population).
AI-3 GPC-2. Develops and participates in preventive measures to increase the health level and prevent diseases.	Does not develop or participate in conducting preventive measures.	Develops and participates in conducting preventive measures.	Develops and participates in conducting preventive measures aimed at improving health levels.	Develops and participates in conducting preventive measures aimed at improving health and preventing diseases in patients (the population).

The evaluation of the competency formation level in the discipline is carried out on the basis of the Regulations on conducting current control of academic progress and intermediate attestation of students in higher education educational programs – Bachelor’s programs,

Specialist's programs, Master's programs – at the Federal State Autonomous Educational Institution of Higher Education NORTH-CAUCASUS FEDERAL UNIVERSITY in its current edition.

ASSESSMENT TOOLS FOR CHECKING THE LEVEL OF COMPETENCY DEVELOPMENT

Task Number	Correct Answer	Content of the Question	Competency
1	c	The name of the scientist who first proposed the term "ecology": a) Humboldt; b) Darwin; c) Haeckel; d) Engler.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
2	c	The branch of ecology that studies environmental factors is: a) population ecology; b) ecosystem science; c) factorial ecology; d) organismal ecology.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
3	c	What are the factors of human activity's impact on nature called? a) Abiotic b) Biotic c) Anthropogenic	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
4	a	The factor that has the greatest influence on the formation of population health: a) lifestyle; b) level and quality of medical care; c) heredity; d) environment.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.

5	c	A negative aspect of urbanization: a) municipal amenities b) a high level of culture c) intense air pollution d) high economic potential	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
6	b	Indicate which scientists first proposed the term "human ecology": a) N.P. Sokolov (1964) b) R.E. Park and E.W. Burgess (1921) c) V.I. Vernadsky (1926) d) B.B. Prokhorov (1968)	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
7	b	The rule of ecological individuality was introduced into science by a) Haeckel b) Ramensky c) Liebig d) Sukachev	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
8	a	Diseases of civilization include: a) obesity; b) myocardial infarction; c) infectious diseases; d) drug addiction.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
9	a	The ozone layer is located: a) in the troposphere; b) in the stratosphere; c) in the ionosphere;	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and

			sanitary-hygienic education of the population.
10	b	Numerical value of the oxygen concentration in the atmosphere: a) 78%; b) 21%; c) 0.93%; d) 0.04%.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
11	Children, the elderly, and people with chronic illnesses	The most representative "indicator group" for studying the response to environmental pollution in populated areas is:	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
13	the health of each specific individual or population	The central concept of human ecology is	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
14	Homeostasis	the ability of the organism to maintain the constancy of the internal environment -	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
15	weather sensitivity	The body's ability to respond to changes in weather by developing pathological reactions is defined as „,	GPC-2. Capable of conducting and monitoring the effectiveness of measures for

			prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
16	naturally focal	Tick-borne encephalitis is classified as a _____ disease.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
17	blastomogens	Chemical compounds capable of causing malignant and benign neoplasms are called _____	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
18	No	Are the following statements true? (Yes / No) The structure of the human cardiovascular, nervous, and digestive systems differs fundamentally from that of other mammals.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
19	No	Are the following statements true? (Yes / No) The mastery of fire and the capacity for technical innovation enabled humanity to completely eliminate the influence of environmental resistance on its population size.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
20	Yes	Are the following statements true? (Yes / No)	GPC-2. Capable of conducting and

		The use of vaccination and modern medicines is one of the main reasons for the significant increase in the human population in the 20th century.	monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
21	1-B, 2-C, 3-E, 4-A, 5-D (Australopithecines → Homo habilis → Homo erectus → Homo sapiens → Cro-Magnons)	Arrange the stages of human ancestral evolution in the correct chronological order (from the earliest to the most recent): A. Emergence of *Homo sapiens* B. Emergence of *Australopithecus* (bipedalism) C. Onset of fire use and the making of primitive tools (*Homo habilis*) D. Spread of Cro-Magnons and the beginning of the Upper Paleolithic era E. Emergence of *Homo erectus* and the adoption of hunting	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
22	(Rodent → tick → human bite → disease)	Arrange the correct sequence of infection transmission (using tick-borne encephalitis as an example): A. Bite of an infected tick B. Circulation of the virus in the host's (rodent's) body C. Infection of human blood and development of encephalitis D. Infection of the tick while feeding on an infected rodent	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.

23	(Soil → plants → animals → food products → humans)	Arrange the links of the food chain in the correct order (from the initial link to the final consumer): A. Humans B. Herbivores (cows, poultry) C. Soil treated with pesticides D. Plants (grains, vegetables, forage grasses) E. Food products (milk, meat, eggs)	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
24	Human use of fertilizers → excess nitrates in water → irrigation/vegetable growth → consumption of vegetables → nitrites in the stomach → binding of hemoglobin → respiratory impairment. The cycle closes on human health, affecting work capacity and bringing the problem back to the individual.	Arrange the actions and their consequences in a cyclical chain so that it forms a closed loop: A person uses fertilizers to increase crop yields Excess nitrates enter the groundwater Nitrates are reduced to nitrites in the stomach Oxygen transport by the blood is impaired (methemoglobinemia) Nitrites are absorbed into the bloodstream and bind to hemoglobin Consumption of vegetables grown in these fields	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
25	1-C, 2-B, 3-A.	Match the type of anthropogenic impact with its correct scale of consequence for human populations: Column A (Anthropogenic Impact) 1. Ozone layer depletion (CFC emissions)	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic

		2. Acid rain (SO_2 and NO_x emissions) 3. Heavy metal contamination of a single river basin Column B (Scale of Consequence) A. Local – increased respiratory diseases within a 10–20 km radius of a factory. B. Transboundary – acidification of lakes and mercury accumulation in fish in neighboring countries. C. Global – increased skin cancer rates and cataracts due to higher UV-B radiation worldwide.	education of the population.
26	1-C, 2-D, 3-B, 4-A	This is a reverse matching task. Match the correct trophic level with the typical concentration of a fat-soluble toxin (e.g., DDT) – from lowest to highest. Column A (Trophic Level) 1. Primary producers (phytoplankton, plants) 2. Primary consumers (zooplankton, herbivores) 3. Secondary consumers (small fish, birds) 4. Apex predators (large fish, eagles, humans) Column B (Relative Toxin Concentration) A. Maximum concentration (1–10 ppm) – stored in adipose tissue. B. Intermediate concentration (0.1–0.5 ppm). C. Low concentration (0.0001–0.001 ppm). D. Medium concentration (0.01–0.05 ppm). Answers: 1-, 2-, 3-, 4-	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.

27	1-B, 2-C, 3-A	Match the level of human needs with the corresponding environmental condition that predominantly satisfies it. Column A (Need Level) 1. Physiological needs (air, water, food) 2. Safety and security needs 3. Esteem and self-actualization (aesthetic needs) Column B (Corresponding Environmental Condition) A. Access to green spaces, aesthetically pleasing landscapes, and absence of visual pollution. B. Access to clean drinking water, breathable air, and a comfortable microclimate. C. Stable geology, low risk of natural disasters (earthquakes, floods), and radiation safety. Answers: 1-, 2-, 3-__.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
28	1-B, 2-C, 3-A	Match the group of natural environmental factors with the primary physiological effect on humans. Column A (Environmental Factor) 1. Geomagnetic storms / Solar activity 2. Seasonal photoperiod (day length) 3. Ultraviolet (UV) radiation Column B (Physiological Effect) A. Stimulation of serotonin production and vitamin D synthesis; risk of erythema and skin aging with overexposure. B. Desynchronosis (disruption of circadian rhythms), increased incidence of myocardial	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.

		infarctions, and meteosensitivity. C. Seasonal affective disorder (SAD) in winter; activation of the pineal gland and melatonin regulation. Answers: 1-, 2-, 3-__.	
29	1-D, 2-A, 3-B, 4-C, 5-E	Match the environmental pollutant/exposure in Column A with its most characteristic health effect in humans in Column B. Column A (Pollutant / Exposure) - Heavy metals (Lead, Mercury) - Nitrates in groundwater - Particulate Matter (PM_{2.5}) from traffic - Chronic noise pollution (>75 dB) - Ionizing radiation (radon) Column B (Health Effect) - Methemoglobinemia ("blue baby syndrome") due to impaired oxygen transport in blood. - Chronic bronchitis, asthma exacerbation, and reduced lung function. - Progressive hearing loss, increased blood pressure, and sleep disturbances. - Neurotoxicity, cognitive decline in children, and Minamata disease. - Increased risk of lung cancer and genetic mutations over decades. Answers: 1-, 2-, 3-, 4-, 5-__.	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle development, and sanitary-hygienic education of the population.
30	1-C, 2-A, 3-E, 4-B, 5-D	Match the term in Column A with its correct definition in Column B. Column A (Term) - Human Ecology - Homeostasis	GPC-2. Capable of conducting and monitoring the effectiveness of measures for prevention, healthy lifestyle

		3. Environmental Resistance 4. Threshold Limit Value (TLV) 5. Demographic Explosion Column B (Definition) A. The ability of an organism or ecosystem to maintain stable internal conditions despite external changes. B. The maximum concentration of a chemical that does not cause any detectable harmful effect on human health. C. An interdisciplinary science studying the patterns of interaction between human populations and their surroundings. D. A sudden change in population growth rate caused by a sharp drop in mortality while birth rates remain high. E. The totality of limiting environmental factors (climate, food, space, diseases) that prevent unlimited population growth. Write your answers as: 1-, 2-, 3-, 4-, 5-___.	development, and sanitary-hygienic education of the population.
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2. Description of the Evaluation Scale

Within the framework of the rating system, students' academic progress in each discipline is evaluated during current control and intermediate attestation. The rating system for assessing students' knowledge is based on the use of a combination of control activities to check the covered material (checkpoints), optimally located throughout the entire time interval of studying the discipline. The principles of the rating system for assessing students' knowledge are based on the requirements described in the Regulations on the organization of the educational process based on the rating system for assessing students' knowledge at NCFU.

3. Criteria for Evaluating Competencies

The grade **Excellent** shall be awarded to a student if the theoretical content of the course has been mastered completely, without gaps; the material is presented exhaustively, consistently, clearly, and logically; the student freely copes with tasks, questions, and other types of knowledge application; uses additional material in the answer; all tasks provided for by the program are

completed, and the quality of their execution is evaluated by a number of points close to the maximum; analyzes the obtained results; demonstrates independence when performing tasks.

The grade **Good** is to be awarded to a student if the theoretical content of the course is mastered completely, the necessary practical competencies are mainly formed, all educational tasks provided for by the training program are completed, and the quality of their execution is sufficiently high. The student firmly knows the material, presents it competently and strictly on the merits of the matter, without allowing significant inaccuracies in answering the question.

The grade **Satisfactory** is awarded to a student in case the theoretical content of the course has been mastered in part only, but the gaps are not of a significant nature, most of the tasks provided for by the program are completed, but contain errors, the student allows inaccuracies and insufficiently correct wording when answering the question, and violations of logical sequence are observed in the presentation of the program material.

The grade **Unsatisfactory** is awarded to a student if they do not know a significant part of the program material, allow significant errors, perform practical works with great difficulty and uncertainty, the necessary practical competencies are not formed, most of the educational tasks provided for by the training program are not completed, and the quality of their execution is evaluated by a number of points close to the minimum.