

**SYLLABUS on Medical Ecology in  
Spring semester 2025-2026 a.y. for  
7M10102 specialty "Public Health"**

ID and name of course	Independent work of the student (SIW)	Number of credits			General number of credits	Independent work of the student under the guidance of a teacher (ISWT)
		Lectures (L)	Practical classes (PC)	Lab. classes (LC)		
ME	4	15	90	-	5	6.
ACADEMIC INFORMATION ABOUT THE COURSE						
Learning Format	Cycle, component	Lecture types	Types of practical classes		Form and platform final control	
Offline		yes				
Lecturer - (s)	Farida Iskakova					
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Assistant - (s)						
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ACADEMIC COURSE PRESENTATION						
To form students' understanding of medical ecology and its importance for public health assessment, and to use the acquired knowledge and skills in their professional activities in the public health system.	1. Identify and describe fundamental ecological problems that pose risks to public health, using core concepts, terminology, and the framework of exposure factors.			1.1 Describes the concepts, basic concepts, and terms used in medical ecology.		
				1.2 Describes environmental changes and their impact on human health, as well as measures to eliminate and prevent health effects.		
	2. Evaluate the influence of key environmental factors on human health and calculate basic epidemiological indicators (e.g., prevalence, incidence, mortality rates).			2.1 Classifies environmental exposures (types, duration, and effect) affecting public health.		
				2.2 Describe observational data indicating negative environmental impacts.		
				2.3 Evaluate the reliability of information related to the environment. issues and their impact on human health.		
	3. Design a structured plan for a basic environmental health study, outlining objectives, methodology, and data collection strategies.			3.1 Draws up a research plan based on the main legislative and regulatory documents related to the quality of atmospheric air, drinking water and soil and the knowledge gained.		
				3.2 Measures the impact of environmental factors on public health using exposure measurement and assessment measures.		
	4. Present and interpret the results of an ecological study using informative epidemiological indicators to assess population health status comparatively.			4.1 Presents results in the form of graphs and tables.		
				4.2Formulates conclusions for presentation in theses, articles, and reports.		
	5. Analyze public health data by applying quantitative statistical methods and relevant information technologies.			5.1. Uses methods of detection, measurement, and quantification of major pollutants to assess the population’s environmental and epidemiological well-being.		



		<b>ATTENTION!</b> The deadline for each task is indicated in the calendar (schedule) for the implementation of the content of the course, as well as in the MOOC. Failure to meet deadlines results in loss of points.			
<b>INFORMATION ABOUT TEACHING, LEARNING AND ASSESSMENT</b>					
<b>Score-rating letter system of assessment of accounting for educational achievements</b>				<b>Assessment Methods</b>	
<b>Grade</b>	<b>Digital equivalent points</b>	<b>points, % content</b>	<b>Assessment according to the traditional system</b>	<p><b>Criteria-based assessment</b> is the process of correlating actual learning outcomes with expected ones, using clearly defined criteria. Based on formative and summative assessments.</p> <p><b>Formative assessment</b> is a type of assessment conducted during daily learning activities. It is the current measure of progress. Provides an operational relationship between the student and the teacher. It allows you to determine the capabilities of the student, identify difficulties, help achieve the best results, and timely correct the educational process for the teacher. The performance of tasks, and the activity of work in the classroom during lectures, seminars, and practical exercises (discussions, quizzes, debates, round tables, laboratory work, etc.) are evaluated. Acquired knowledge and competencies are assessed.</p> <p><b>Summative assessment</b> - a type of assessment, that is carried out upon completion of the study of the section by the program of the course. Conducted 3-4 times per semester when performing SIW. This is the assessment of mastering the expected learning outcomes of the descriptors. Allows you to determine and fix the level of mastery of the course for a certain period. Learning outcomes are evaluated.</p>	
A	4.0	95-100	Great	<p><b>Formative and summative assessment</b></p> <p>1. Activity in discussions of topic in classes</p> <p>2. Work in practical classes</p> <p>3. Independent work</p> <p>4. Design and creative activity</p> <p>5. Final control (exam)</p>	
A-	3.67	90-94			
B+	3.33	85-89			
B	3.0	80-84	Satisfactorily	<p><b>Points % content</b></p> <p>1. 10</p> <p>2. 10</p> <p>3. 10</p> <p>4. 30</p> <p>5. 40</p>	
B-	2.67	75-79		Activity in discussions of topics in classes 10	
C+	2.33	70-74		Work in practical classes 10	
C	2.0	65-69	Unsatisfactory	Independent work 10	
C-	1.67	60-64		Design and creative activity 30	
D+	1.33	55-59		Final control (exam) 40	
D	1.0	50-54		TOTAL 100	
<b>Calendar (schedule) for the implementation of the content of the course. Methods of teaching and learning.</b>					
<b>A week</b>	<b>Topic name</b>			<b>Number of hours</b>	<b>Max. ball</b>
<b>MODULE 1 INTRODUCTION TO MEDICAL ECOLOGY</b>					
	PC 1. Subject of medical ecology as a science and field of practice.			3	0
	PC 2. Modern concepts and trends in medical ecology.			3	7
	ISWT 1. Control work, tests, individual/group projects, essays, situational tasks, testing, portfolio, etc., at the teacher's choice. An estimated 25-30 % of the total points for foreign control. Consultations on the implementation of SIW 1.				
	PC 3. The quality of the human environment.			3	7
	ISWT 2. Choose one health problem and describe using epidemiological questions. Where? When? Who? Why? and How?				
	PC 4. Influence and adaptation of the human organism to ecological environmental factors.			3	7
	ISW 1 on 1-4 seminars topic.				25
	PC 5. Concepts of 'health risk' and environmental risk'. Stages of risk assessment. Risk management.			3	7
<b>MODULE 2 ENVIRONMENTAL FACTORS</b>					
	PC 6. Types of environmental monitoring, methods of risk assessment, and impact on Public Health.			3	7
	ISWT 3. Consultations on the implementation of SIW 2				0
	PC 7. Regulatory documents for the assessment of maximum permissible concentrations of harmful substances in water, air, and soil.			3	8
	ISTW 4. Parsing and analyzing an article about an environmental problem.				
	PC 8. Assessment of the impact of environmental pollution on the health of the population.			3	6
	ISW2 on 5-8 seminars topic.				25
<b>Midterm 1</b>					100
	PC 9. Assessment of the hydrosphere and the impact of its pollutants on public health.				7
	ISWT 5. Write an abstract on an environmental problem and medical interventions to reduce harm to public health (review of several articles)..			3	17
	PC 10. Assessment of lithosphere and its polluting factors on public health.			3	7

<b>MODULE 3. OTHER ENVIRONMENTAL FACTORS</b>			
	PC 11. Evaluation and assessment of physical environmental factors and their impact on human health. Action plans to reduce the harmful effects of physical substances.	<b>3</b>	<b>7</b>
	SIW 3 on 9-11 seminars topic.		25
	PC 12. Assessment of chemical environmental factors and their impact on public health. Action plans to reduce the harmful effects of chemicals.	<b>3</b>	<b>7</b>
	PC 13. Assessment of nutrition and the impact of harmful substances associated with their quality and preparation on the population's health.	<b>3</b>	<b>7</b>
	ISWT 6. Overview of research results		
	PC 14. Assessment of indoor spaces and their impact on health.	<b>3</b>	<b>7</b>
	PC 15. Climate change and its impact on public health.	<b>3</b>	<b>8</b>
	ISW 4 on 14-16 seminars topic.		<b>25</b>
<b>Midterm 2</b>			<b>100</b>
<b>Final control (exam)</b>			<b>100</b>
<b>TOTAL for course</b>			<b>100</b>

Dean \_\_\_\_\_ **S.B. Kalmahanov**

Chairman of the Academic Committee  
on the quality of teaching and learning \_\_\_\_\_ **G.M.Kurmanova**

Head of Department \_\_\_\_\_ **A.E.Ualiyeva**

Lecturer \_\_\_\_\_ **F.A. Iskakova**

### List of tasks for master's student independent work (IWS) :

- 1: Risk Assessment and GIS Mapping of an Urban Environmental Stressor
- 2: Policy Analysis of a "One Health" Intervention
- 3: Ecological Model of a Vector-Borne Disease under Climate Change Scenarios
- 4: Field Study Proposal: Biomonitoring for Endocrine Disrupting Chemicals (EDCs) in a Human-Impacted Ecosystem

Criterion	"Excellent" Max. weight in %	"Good" Max. weight in %	"Satisfactory" Max. weight in %	"Unsatisfactory" Max. weight in %
	95- 100 %	80-94%	64-79%	<63%

### RUBRICATOR OF THE SUMMATIVE ASSESSMENT CRITERIA EVALUATION OF LEARNING OUTCOMES

Criterion	«Excellent» (A) 90-100%	«Good» (B) 75-89%	«Satisfactory» (C,D) 69-74%	«Unsatisfactory» (F)<50%
<b>1. Understanding &amp; Application of Theory (25%)</b> <i>Demonstrates knowledge of epidemiological concepts (study designs, measures of association) and biostatistical principles appropriate to the</i>	Shows <b>mastery</b> of relevant theories. Accurately selects and expertly justifies the choice of study design and statistical approach for the given problem.	Shows <b>proficient</b> understanding. Selects appropriate study design and statistical methods with a reasonable justification.	Shows a <b>basic</b> or <b>partial</b> understanding. Selection of methods is generally appropriate but justification may be weak or contain inaccuracies.	Shows <b>major misunderstandings</b> . Inappropriate methods are selected, or justification is missing/incorrect.
<b>2. Data Analysis &amp; Methodology (30%)</b> <i>Executes a correct and complete statistical analysis (descriptive &amp; inferential) using appropriate software/tools.</i>	Analysis is <b>flawless and insightful</b> . Correctly calculates all relevant statistics, creates optimal visualizations (tables/graphs), and thoroughly checks assumptions.	Analysis is <b>correct and complete</b> . Performs all necessary calculations and creates clear visualizations. Minor errors in presentation or assumption checking may be present.	Analysis is <b>partially complete or contains errors</b> . Key steps may be missing, visualizations are unclear, or significant methodological errors are present.	Analysis is <b>seriously flawed or incomplete</b> . Major errors in calculations, or fails to perform core analytical tasks.
<b>3. Interpretation &amp; Critical Thinking (25%)</b> <i>Interprets results in context, links findings to public health, and demonstrates critical reasoning.</i>	Interpretation is <b>critical, nuanced, and evidence-based</b> . Clearly links results to study aims, discusses limitations, public health implications, and alternative explanations.	Interpretation is <b>clear and logical</b> . Correctly explains what results mean and connects them to the research question. May lack depth in discussing limitations or implications.	Interpretation is <b>superficial or partially incorrect</b> . Struggles to move beyond describing numbers to explaining meaning. May contain misinterpretations.	Interpretation is <b>missing, irrelevant, or severely incorrect</b> . Fails to explain results or makes fundamentally wrong conclusions.

<b>4. Report Structure &amp; Academic Integrity (20%)</b> <i>Presents work in a well-structured, clear scientific report (IMRaD format) and adheres to academic standards.</i>	Report is <b>professional, clear, and perfectly structured</b> . Follows scientific format rigorously, integrates visual aids effectively, and cites all sources correctly in APA style. <b>No plagiarism.</b>	Report is <b>well-structured and clear</b> . Format is mostly correct, visual aids are included, and citations are largely consistent. <b>No plagiarism.</b>	Report is <b>disorganized or unclear</b> . Deviates from standard format, visual aids are poorly formatted, or contains citation errors.	Report is <b>unstructured and incoherent</b> . Lacks standard sections, visual aids are missing or irrelevant, or contains <b>plagiarism or major citation failures</b> .
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