

**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					
<i>Offline</i>		yes			IC Univer written					
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. 4.2 Formulates 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.						

		5.2. Uses the results of environmental research and statistical information to identify trends and predict their impact on human health.
Prerequisites	Public Health[96307]	
Postrequisites	Fundamentals of Public Health Research [101986]	
Learning Resources	<p>Literature: main and additional.</p> <ol style="list-style-type: none"> 1. Ecological Medicine, 2nd Edition: The Antidote to Big Pharma and Fast Food by Dr. Sarah Myhill and Craig Robinson.-2023.- 512 p. 2. Environmental Medicine. J.Fowles, Ph.Weinstein, Ch-H Tseng. DOI:10.1007/978-94-007-4375-5_24 3. Ecological Medicine 2ND Edition: The antidote to Big Pharma and Fast Food . By Sarah Myhill and Craig Robinson, 2023. -526 p. 4. Environmental and Health Impacts of Air Pollution:A Review Ioannis Manosalidis, Elisavet Stavropoulou,Agathangelos Stavropoulos and Eugenia Bezirtzoglou//Frontiers in Public Health, 2020.- 1-13 pp. chrome-extension://efaidnbmnnibpcajpcglclefindmkaj/https://com-mendeley-prod-publicsharing-pdfstore.s3.eu-west-1.amazonaws.com/1e1a-CC-BY-2/10.3389/fpubh.2020.00014.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEO%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCWV1LXdle3QtMSJ <p>Research infrastructure</p> <ol style="list-style-type: none"> 1. Auditorium <p>Internet resources</p> <ol style="list-style-type: none"> 1. Kaznu Library 2. MOOC / video lectures, etc. 3. www.who.org 4. www.cdc.gov 5. https://pubmed.ncbi.nlm.nih.gov/ <p>Software (optionally)</p> <ol style="list-style-type: none"> 1. IBM SPSS – 26 version 2. Excel program 	

Academic course policy	<p>Academic Values: Integration of science and education. The research work of students, undergraduates, and doctoral candidates represents a deepening of the educational process. It is carried out directly in the university's laboratories, scientific and design departments, and student scientific and technical associations. Independent student work at all levels of education is aimed at developing research skills and competencies through acquiring new knowledge using modern research and information technologies. Instructors at a research university integrate the outcomes of scientific activities into lecture and seminar topics, practical and laboratory classes, as well as into tasks for student scientific and technical work. These elements are reflected in the syllabus and ensure the relevance of training sessions and assignments.</p> <p>Attendance & Deadlines: The deadline for each task is indicated in the course calendar (schedule). Failure to meet deadlines will result in a loss of points.</p> <p>Academic Honesty: Practical and laboratory classes, along with student scientific work, foster independence, critical thinking, and creativity. Plagiarism, forgery, the use of cheat sheets, and cheating at any stage of task completion are unacceptable. Compliance with academic honesty during theoretical training and examinations is regulated, in addition to general policies, by the "Regulations on Checking Students' Text Documents for Borrowings." These documents are available on the main page of the University's Information System.</p> <p>Basic Principles of Inclusive Education: The university's educational environment is designed as a safe space where support is always available and where teachers maintain an equal attitude toward all students, and students toward each other, regardless of gender, race/ethnicity, religious beliefs, socioeconomic status, physical health, etc. Everyone needs the support and friendship of peers and fellow students. For all students, progress is measured more by what they can do than by what they cannot. Diversity enriches all aspects of university life.</p> <p>All students, especially those with disabilities, can receive counseling assistance via phone/email at iskakovaf@gmail.com or through WhatsApp video link via a permanent meeting link in MS Teams.</p> <p>Integration of MOOCs (Massive Open Online Courses): If a MOOC is integrated into the course, all students must register for it. The deadlines for completing MOOC modules must be strictly followed according to the course study schedule.</p>
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	ATTENTION! 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.
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INFORMATION ABOUT TEACHING, LEARNING AND ASSESSMENT

Score-rating letter system of assessment of accounting for educational achievements				Assessment Methods	
Grade	Digital equivalent points	points, % content	Assessment according to the traditional system		
A	4.0	95-100	Great		
A-	3.67	90-94			
B+	3.33	85-89	Fine		
B	3.0	80-84			
B-	2.67	75-79			
C+	2.33	70-74			
C	2.0	65-69	Satisfactorily		
C-	1.67	60-64			
D+	1.33	55-59	Unsatisfactory		
D	1.0	50-54			

Calendar (schedule) for the implementation of the content of the course. Methods of teaching and learning.

A week	Topic name	Number of hours	Max. ball
MODULE 1 INTRODUCTION TO MEDICAL ECOLOGY			
	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
MODULE 2 ENVIRONMENTAL FACTORS			
	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
Midterm 1			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

MODULE 3. OTHER ENVIRONMENTAL FACTORS			
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.	3	7	
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.	3	7	
PC 13. Assessment of nutrition and the impact of harmful substances associated with their quality and preparation on the population's health.	3	7	
ISWT 6. Overview of research results			
PC 14. Assessment of indoor spaces and their impact on health.	3	7	
PC 15. Climate change and its impact on public health.	3	8	
ISW 4 on 14-16 seminars topic.			25
Midterm 2			100
Final control (exam)			100
TOTAL for course			100

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

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