

**THEMATIC PLAN  
OF LECTURES AND LABORATORY CLASSES ON  
RADIATION AND ECOLOGICAL MEDICINE WITH  
STUDENTS ON SPECIALITY  
7-07-0911-01 «GENERAL MEDICINE»**

Section, topic #	Section (topic) name	Number of hours	
		lectures	laboratory
	<b>4th semester</b>		
	<b>Ecological Medicine</b>	<b>6</b>	-
1.1.1.2.	<i>Basics of environmental medicine. Environmental factors. Effect of physical factors on the human body and health</i>	1,5	-
1.3. -1.5.	<i>Effect of chemical factors on the human body and health. Effect of biological factors on the human body and health. Heredity and environment</i>	-	-
1.6.1.7.	<i>Environmental and medical consequences of air pollution. Environmental and medical consequences of hydrosphere pollution</i>	1,5	-
1.8.	<i>Effect of the state of the lithosphere and the quality of food on population health</i>	1,5	-
1.9.	<i>Medical aspects of the influence of the indoor environment on human health</i>	-	-
1.10.1.11.	<i>Monitoring the environment and public health. Regulatory legal framework for environmental protection</i>	1,5	-
	<b>Laboratory lessons</b>	-	<b>34</b>
1.1.	Fundamentals of environmental medicine. Environmental factors. Environmentally dependent morbidity of the population. Lab.w.: «Human adaptation to environmental factors»	-	2
1.2.	Environmental factors. Effect of physical factors on the human body and health: the influence of the visible region of the solar spectrum and illumination on the human body. Lab.w.: «Assessment of the risk of seasonal emotional disease»	-	2
1.2.	Effect of physical factors on the human body and health: human health effect of ultraviolet radiation (UVR). Lab.w. «Evaluation of the type of skin sensitivity to UV radiation. Assessment of risk for skin malignancy»	-	2
1.2.	Effect of physical factors on the human body and health: Geomagnetic factors. Weather sensitivity. Lab.w.: «Biological rhythms. Calculation of the daily rhythm of human temperature and pulse»	-	2
1.3.	<i>Effect of chemical factors on the human body and health.</i> Lab.w.: «Epidemiological studies of the populations exposed to xenobiotics using the «case-control» method»	-	2
1.4.	<i>Effect of biological factors on the human body and health</i>	-	2
1.5.	<i>Heredity and environment. The role of genetic factors in the occurrence of environmentally dependent human pathology</i>	-	2
1.6.	<i>Environmental and medical consequences of air pollution. Factors and sources of air pollution. Global and local environmental consequences of air pollution.</i> Lab.w.: «Assessment of ozone level in ambient air»	-	2
1.6.	<i>Environmental and medical consequences of air pollution. Medical consequences of air pollution. Acute and chronic effects of pollutants on the human body.</i>	-	2

	<i>Lab.w.: «Assessment of non-carcinogenic risks due to air pollution»</i>		
1.7.	<i>Environmental and medical consequences of hydrosphere pollution. Factors and sources of hydrosphere pollution. Global and local environmental consequences of hydrosphere pollution</i>	-	2
1.7.	<i>Environmental and medical consequences of hydrosphere pollution. Medical consequences of hydrosphere pollution. Acute and chronic effects of pollutants on the human body. Lab.w.: «Quantitative estimation of sulfates level in drinking water»</i>	-	2
1.8	<i>Effect of the state of the lithosphere and the quality of food on population health. Factors and sources of lithosphere contamination. Migration of xenobiotics in the Biosphere</i>	-	2
1.8.	<i>Effect of the state of the lithosphere and the quality of food on population health. Characteristics of food products. Preventive practices addressing potential adverse effects of xenobiotics ingested with foods. Lab.w.: «Food composition assessment»</i>	-	2
1.9.	<i>Medical aspects of the influence of the indoor environment on human health. Ecological characteristics of the environment of residential and public premises. Lab.w.: «Assessment of the environmental cancer risk»</i>	-	2
1.9.	<i>Medical aspects of the influence of the indoor environment on human health. Non-ionizing electromagnetic radiation as a factor of the indoor environment. Lab.w.: «Assessment of the electromagnetic environment in the room»</i>	-	2
1.10.	<i>Monitoring of the environment and the health status of the population</i>	-	2
1.11.	<i>Regulatory and legal foundation of environment protection</i>	-	2
	<b>5th semester</b>		
	<b>Lectures</b>	<b>9</b>	<b>-</b>
2.1.	Effects of ionizing radiation	1,5	-
2.2. 2.3.	Public exposure of humans. Background radiation levels. Chernobyl Accident	1,5	-
2.4.	Biomedical consequences of irradiation. Radiosensitivity	1,5	-
2.5.	Radiation injuries to humans	1,5	-
2.6.	Deterministic and stochastic effects of radiation	-	-
2.7.	Radiation safety	1,5	-
2.8.	Reduction in radiation burden on population	1,5	-
	<b>Laboratory lessons</b>	<b>-</b>	<b>34</b>
2.1.	Effects of ionizing radiation. Physical basis of the action of ionizing radiation. Laboratory work: «Calculation of the percentage of radionuclides after an accidental release»	-	2
2.1.	Effects of ionizing radiation. The effects of ionizing radiation on the biological objects. Laboratory work: «Calculation of the time required to achieve a given activity in environmental objects»	-	2
2.1.	Effects of ionizing radiation. Methods of ionizing radiation registration. Introduction to dosimetry	-	2
2.2.	Public exposure of humans. Background radiation levels. Natural background radiation	-	2
2.2.	Public exposure of humans. Background radiation levels. Technologically modified radiation background. Laboratory work: «Evaluation of the ambient dose equivalent rate of roentgen and gamma radiation by the MKC-6130A dosimeter-radiometer»	-	2
2.3.	Chernobyl accident. Radiation accidents: concept, stages of evolving. Formation of population radiation doses during and after a radiation accident. Laboratory work: «Evaluation of radioactive cesium incorporated in the human body»	-	2
2.3.	Chernobyl accident. Characteristics of the mostly dose causing radionuclides. Radiation background in the Republic of Belarus nowadays. Medical consequences of the Chernobyl accident. Principles of protective measures. Laboratory work: «Comparative profile of the main groups radionuclides»	-	2
2.4.	Biomedical consequences of irradiation. Radiosensitivity	-	2
2.5.	Deterministic and stochastic effects of radiation.	-	2

	Laboratory work: «Comparative profile of deterministic and stochastic effects of exposure»		
2.5.	Deterministic and stochastic effects of radiation. Variants for dependence of stochastic effects in humans on received dose of low-dose range	-	2
2.6.	Radiation injuries to humans. Acute radiation syndromes. Laboratory work: «Individual dosimetry. Measurement of an individual equivalent dose with a ДКC-AT3509A dosimeter»	-	2
2.6.	Radiation injuries to humans: dependence on the type and history of exposure; acute radiation sickness and chronic radiation sickness. Laboratory work: «Determination of the severity of acute radiation sickness (Human hemogram analysis)»	-	2
2.7.	Radiation safety. Prescriptive legal foundation for radiation safety. Principles of radiation safety, practical application	-	2
2.7.	Radiation safety. Sealed and unsealed sources of ionizing radiation concept. Methods of protection against ionizing radiation at work with sources of ionizing radiation and appliances generating ionizing radiation. Laboratory work: «Evaluation of the external radiation exposure of population living in a territory contaminated with radionuclides»	-	2
2.8.	Reduction in radiation burden on population. Medical exposure. Reduction of medical exposure of patients and members of the public from the sources of ionizing radiation used for medical purposes. Laboratory work: «Evaluation of the long-term radiation exposure of the population due to entry of radionuclides into the human body by oral and inhalation routes»	-	2
2.8.	Reduction in radiation burden on population. Emergency exposure situation. Decision making criteria for protecting members of the public in radiation accidents. Reducing the annual effective dose from external exposure	-	2
2.8.	Reduction in radiation burden on population. Reducing the committed effective dose from internal exposure. Principles of habitation on the terrains contaminated with radionuclides. Laboratory work: «A set of measures to diminish the annual effective dose from external and internal exposure»	-	2
	<b>Total hours</b>	<b>15</b>	<b>68</b>