Ministry of Healthcare of Ukraine

Poltava State Medical University

Department of hygiene and ecology

SYLLABUS

"Hygiene and ecology"

Academic discipline is mandatory

level of higher education	the second (master's) level of higher education
field of knowledge	22 «Healthcare»
specialty	222 «Medicine»
academic qualification	Master of Medicine
professional qualification	Medical Doctor
academic and professional program	«Medicine»
mode of study	full-time
course and	2, 3, 6
semester of study of the discipline	3, 4, 5, 6, 11, 12

Module 1. **Common questions of hygiene and ecology**

Module 2. **Special problems of hygiene and ecology**

Module 3. **Hygiene and Human Ecology**

Poltava – 2024

INFORMATION ABOUT LECTURERS

Surname, name, patronymic of the lecturer (lecturers), scientific degree, academic title	Burya Lilia Volodymyrivna, Candidate of Medical Sciences, Associate Professor. Matviyenko Tamila Mykolayivna, Candidate of Medical Sciences, Associate Professor. Komyshan Iryna Vadimivna, lecturer.
Profile of the lecturer (lecturers)	https://ecology.pdmu.edu.ua/team
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MAIN CHARACTERISTICS OF THE ACADEMIC DISCIPLINE

The scope of the academic discipline

Number of credits / hours - 8 ECTS credits / 240 hours of which:
Lectures (hours) - 26
Practical classes (hours) - 90
Self-directed work (hours) - 124
Type of control – final module control

The policy of the academic discipline

The policy of the discipline requires compliance with the requirements for effective study and mastery of the materials of the discipline being studied, namely: students are required to appear for lectures and practical classes on time, in accordance with the schedule; the student is obliged to attend all classes and lectures on the subject, to complete tasks on independent work, to complete all current and final grades.

A student who missed a lecture or practical lesson is noted in the journal as absent. Delays are not allowed. Missed lectures / practical classes need to be reworked, practical classes are considered reworked subject to a positive grade.

Observance of academic integrity by students is obligatory, i.e.: independent performance of all types of works, tasks, forms of control provided by the working program of academic discipline; links to sources of information when using developments, statements, information, ideas; compliance with the law on copyright and related rights; providing reliable information about the results of their own educational (scientific) activities, used research methods and sources of information.

The use of technical means or additional sources of information is prohibited during the classes and final control at the department.

Organizing the educational process, teachers and students act in accordance with current legislation on high education, and regulations of the academy, which are posted **https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti**.

Description of the academic discipline (summary)

Professional training of specialists of various medical specialties cannot be of high quality and effective without in-depth study of preventive disciplines - hygiene, sanitation and ecology.

Knowledge of hygiene is necessary for doctors from a number of positions, the main of which are:

1. Analysis of the state of health of the population or its individual contingents in connection with anthropogenic and social conditions of life and work.
2. Modern diagnosis of diseases, since more than 80% of pathogens and causes of diseases (natural, domestic, social, industrial, etiological factors and risk factors) are in the environment, which are studied by hygiene and ecology.
3. Primary, secondary and tertiary prevention of diseases, organization, implementation and control over the implementation of preventive measures by various segments of the population.
4. Assessment of living conditions in organized collectives.
5. Analysis of the difficulty and intensity of labor and professional activity in order to determine the need to transfer workers with certain health defects to easier types of work, prescribing medical and preventive nutrition, dispensation, sanatorium-resort treatment, rehabilitation.
6. The ability to recommend methods and means of daily routine, study, work, personal hygiene, rational nutrition, the use of natural factors and a complex of methods and means of hardening the body.
7. Provision of medical recommendations and orders regarding the use of methods and means of prevention of nosocomial infections, infections and invasions among the population during its service in the polyclinic, at home, in organized teams.
8. Carrying out sanitary and educational work among the sick, in organized teams (children's, educational, labor) and among the general population, etc.

Medical education should contribute to the formation of young specialists not only clinical, but primarily preventive, i.e. hygienic thinking, understanding of the role of environmental factors and social and living conditions in the occurrence of health disorders and diseases, justification of preventive measures.

Pre-requisites and post-requisites of the academic discipline (interdisciplinary links)

Hygiene and ecology as a discipline is based on the study by students of such disciplines as Medical and Biological Physics, Philosophy, Medical Chemistry, Histology, Cytology and Embryology, Human Anatomy, Biological and bioorganic Chemistry, Physiology, Pharmacology, Pathomorphology, Pathophysiology, Microbiology, Virology, and Immunology.

Hygiene and ecology lays the foundations for the study of such disciplines as Propaedeutics of Inner medicine, Inner medicine, Surgery, Social medicine, public health and basics of evidence-based medicine, Obstetrics, Obstetricians, Pediatric assistance, General medical training, Infectious Diseases, Tuberculosis, Oncology and Radiation Medicine, Neurology, Otorhinolaryngology, Ophthalmology.

The aim and tasks of the academic discipline:

1. The aim of studying the discipline is to study the theoretical foundations of preventive medicine, including hygiene and ecology, as sciences, which are the basis of the preventive component of the professional worldview of a specialist in “Medicine”, students master the necessary knowledge, skills, goals, skills that meet the ultimate goals of the study discipline in accordance with the Standard of Higher Education of Ukraine.
2. The main tasks of studying the discipline are to establish the theoretical foundations of hygiene and ecology, as sciences (terminology, laws, methods, principles of hygienic regulation, regulatory and methodological support for the application of preventive measures) and practice practical skills in the prevention of infectious and non-infectious diseases in accordance with current principles of legislation of Ukraine; carrying out preventive and current sanitary supervision; mastering laboratory research methods (organoleptic, physical, chemical, biological, bacteriological methods); use of favorable health factors of the environment to strengthen human health, harden the body, etc.

Competences and learning outcomes in accordance with the academic and professional program, the formation of which is facilitated by the discipline (integral, general, special)

Integral competence	Ability to solve complex specialized problems and practical problems in professional activities in the field of health care in the specialty "Medicine", or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements.
General competences	1. Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge. 2. Ability to apply knowledge in practical situations. 3. Knowledge and understanding of the subject area and understanding of professional activity. 4. Ability to adapt and act in a new situation. 5. Ability to make informed decisions; work in a team; interpersonal skills. 6. Ability to communicate in the state language both orally and in writing; ability to communicate in a foreign language. Ability to use international Greco-Latin terms, abbreviations and clichés in professional oral and written speech. 10. The desire to preserve the environment.
Special competences	1. Patient interviewing skills. 2 Ability to determine the nature of nutrition in the treatment of diseases. 3. Ability to determine the principles and nature of treatment of diseases. 4. Ability to diagnose emergencies. 5. Ability to carry out sanitary and hygienic and preventive measures. 6. Ability to plan and carry out preventive and anti-epidemic measures against infectious diseases. 7. Ability to determine the tactics of management of persons subject to dispensary supervision. 8. Ability to conduct epidemiological and medical-statistical studies of public health; processing of state, social, economic and medical information; 9. Ability to assess the impact of the environment, socio-economic and biological determinants on the health of the individual, family, population. 10. Ability to analyze the activities of a doctor, department, health care institution, take measures to ensure the quality of medical care and improve the efficiency of medical resources.
Learning outcomes	1. To know the structure and functions of individual organs and systems and the human body as a whole in the norm, with the development of pathological processes, diseases; be able to use the acquired knowledge in further training and in the practice of the doctor. 2. Collect data on patient complaints, life history (professional history in particular) in a health care facility and / or at the patient's home, according to the standard survey scheme. 5. To determine the necessary mode of work and rest in the treatment of the disease in a health care facility, at home of the patient and at the stages of medical evacuation, including in the field, on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making

	an informed decision according to existing algorithms and standard schemes. 6. Prescribe the necessary medical nutrition in the treatment of the disease, in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. 7. To determine the nature of treatment of the disease (conservative, operative) and its principles in the conditions of the health care institution, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. 11. Organize and conduct medical and evacuation measures among the population and servicemen in emergency situations, including in the field, during the detailed stages of medical evacuation, taking into account the existing system of medical and evacuation support. 14. Implement a system of anti-epidemic and preventive measures, including primary prevention measures in the health care institution and beyond, on the basis of data on the health of the population served, the presence of environmental impact, the determinant of health using existing methods, within the framework of primary health care to the population. Organize secondary and tertiary prevention measures among the assigned contingent of the population, using a generalized procedure for assessing human health (screening, preventive medical examination, seeking medical care). 15. Plan and implement preventive and anti-epidemic measures to prevent the spread of infectious diseases in a health care facility based on the results of epidemiological surveys of infectious diseases, epidemiological analysis, using existing preventive and anti-epidemic methods. Identify in the health care facility, using statistical and laboratory methods of risk group, risk areas, time of risk, risk factors and carry out epidemiological analysis of infectious diseases of the population. Diagnose infectious diseases in the early stages, carry out primary anti-epidemic measures in the center of infectious disease. 16. Determine the tactics of management of persons subject to dispensary supervision in a health care institution or at home on the basis of the obtained data on the patient's health, using standard schemes, using knowledge about the person, his organs and systems, adhering to appropriate ethical and legal norms, by making an informed decision. 18. Maintain medical records of the patient and the population on the basis of regulations, using standard technology. Prepare reports on personal production activities, using official accounting documents in the standard form. 19. Conduct epidemiological and medical-statistical studies of public health; processing of state, social, economic and medical information under any circumstances using standard procedures, modern computer information technologies in particular. 20. Assess the impact of the environment, socio-economic and biological determinants on the health of the individual, family, population. Analyze the incidence of the population, identifying risk groups, risk areas, time and risk factors in the health care facility, using statistical and laboratory methods. 23. Form goals and determine the structure of personal activities based on the results of the analysis of certain social and personal needs. 24. Adhere to a healthy lifestyle; use the techniques of self-regulation and self-control. 25. To be aware of and guided in their activities by civil rights, freedoms and responsibilities, to constantly improve their professional and cultural levels. 26. Adhere to the requirements of ethics, bioethics and deontology in their professional activities. 27. Ensure the necessary level of individual safety (own and those cared for) in the event of typical dangerous situations in the individual field of activity.

Learning outcomes of the academic discipline:

upon completing their study in the academic discipline, students must

know:

• Have specialized knowledge about the human, his organs and systems, standard methods of laboratory and instrumental research.

• Have specialized knowledge about the human, his organs and systems; ethical and legal norms; algorithms and standard schemes for determining the mode of work and rest during treatment, based on preliminary and clinical diagnosis of the disease.

• Have specialized knowledge about the human, his organs and systems; algorithms and standard schemes of nutrition in the treatment of the disease.

• Have specialized knowledge about the human, his organs and systems; standard methods of human examination (at home, on the street, in a health care facility) in conditions of lack of information.

• Know the legal framework for the provision of emergency medical care, in particular the law of Ukraine "On emergency medical care". Have specialized knowledge about urgent human conditions; principles of emergency medical care.

• Know the stages of medical evacuation in an emergency, including in the field. Know the system of medical and evacuation support. Know the principles of organization and conduct of medical and evacuation measures among the population and servicemen. Know the system of warning the population in emergency situations. Know the guidelines for the actions of the doctor during the deployment of the stages of medical evacuation.

• Know the system of sanitary and hygienic and preventive measures among the fixed contingent of the population. Know the principles of medical examination of different groups of the population: healthy people who are subject to dispensary supervision (newborns, children, adolescents, pregnant women, representatives of professions that must undergo mandatory dispensary examination) and groups of patients. Know the indicators of evaluation of the organization and effectiveness of medical examination. Know the methodological approaches to assess the state of the environment and the presence of factors that affect the health of the population in these conditions. Know the principles of nutrition, water supply, mode of activity and recreation, the formation of a favorable working environment, primary prevention of disease and injury; principles and methods of promoting a healthy lifestyle.

• Know the principles and systems of planning and conducting preventive and anti-epidemic measures for infectious diseases in typical conditions and in conditions of epidemic distress based on the results of analysis, data from the survey of the center of infectious diseases. Know the methods of detection and early diagnosis of infectious diseases, the organization of primary anti-epidemic measures in the center of infectious diseases. Know the preventive and anti-epidemic methods of organizing measures to prevent the spread of infectious diseases.

• Know the system of official document management in the professional work of a doctor, including modern computer information technology.

• Know the methods of epidemiological and medical-statistical research; requirements for diagnostic tests that can be used for screening studies; risk indicators and methods of their calculation. Know standard methods, including modern computer information technology, processing of state, social and medical information.

• Know the methods of assessing public health; environmental factors that negatively affect the health of the population; methods of statistical analysis and laboratory research, health assessment of certain contingents, environmental factors and methods of determining the relationship between them; measures to prevent the negative impact of environmental factors on public health. Know the socio-economic and biological determinants that affect public health; types and methods of prevention to prevent the negative impact of socio-economic factors on the health of the population and its individual groups. Know the principles of formation of risk groups, risk areas, time and risk factors.

be able to:

• To analyze the results of laboratory and instrumental studies and on their basis to assess information about the patient's diagnosis.

• To determine on the basis of preliminary and clinical diagnosis by making an informed decision the necessary mode of work and rest in the treatment of the disease.

• To determine on the basis of preliminary and clinical diagnosis, the nature of nutrition in the treatment

of the disease.

• In the absence of information, using standard techniques, by making an informed decision to assess the human condition and make a diagnosis.

• To identify emergencies; principles and tactics of emergency medical care; to carry out organizational and diagnostic measures aimed at saving and saving human life.

• To organize and perform medical activities during the deployment of stages of medical evacuation in emergencies, including in the field.

• To form groups of the population for their medical examination. Be able to make a plan for medical examination of different groups. Have the skills to organize medical examinations of relevant contingents. Have the skills to analyze the health of groups based on the results of medical examinations and the development of medical and preventive measures. Have the skills to compile an analytical report on the state of health of the population depending on the factors of production and the environment. Be able to organize the promotion of a healthy lifestyle, primary prevention of diseases and injuries.

• To plan measures to prevent the spread of infectious diseases on the basis of epidemiological analysis, using preventive and anti-epidemic methods. Be able to organize preventive and anti-epidemic measures for infectious diseases in health care facilities, among the population and in the centers of infectious diseases on the basis of epidemiological analysis by risk groups, risk areas, time and risk factors.

• To determine the source and location of the required information depending on its type. Be able to process information and analyze the information obtained.

• Have standard methods of descriptive, analytical, epidemiological and medical-statistical research. Be able to assess in the dynamics and in comparison with the average data indicators of morbidity, including chronic non-communicable diseases, disability, mortality, integrated health indicators. Have a method of screening for important non-communicable diseases. Be able to calculate and assess indicators of individual and population risk of disease occurrence and course. Have a method of forming risk groups. Be able to determine the source of the required information depending on its type; ability to conduct statistical processing of material and analysis of the received information.

To assess the state of health of the population, the state of the environment and negative factors influencing health. Have methods of statistical and laboratory analysis of the health of different groups. Be able to form preventive measures on the basis of data on the relationship between the state of the environment and the state of health of certain populations. Be able to calculate the health of the population. Be able to assess the relationship and impact of socio-economic and biological factors on the health of the individual, family, population. Be able to plan preventive measures to prevent the negative impact of socio-economic factors on the health of the population and its individual groups.

Thematic plan of lectures (by modulees), specifying the basic issues, which are considered at the lecture

№ s / n	Name topics	Number of hours
Module 1. Common questions of hygiene and ecology		
1.	Hygiene as a science. Ecology as a science. Environment and human health. Biosphere and its hygienic value. Bioethical aspects and issues of biosafety of denaturation of the biosphere. *Hygiene as a science, its purpose, tasks, content, connection with other sciences. Ecology as a science, its purpose, tasks, content, connection with other sciences. Preventive orientation of domestic medicine, public and personal prevention, primary, secondary and tertiary, defining priorities. Sanitation as a branch of practical health care. Varieties of sanitation. The value of hygiene knowledge for the formation of professional thinking and practice of doctors of various specialties. The concept of methodology as a doctrine of scientific knowledge of reality. Fundamentals of hygiene methodology: general philosophical laws and categories, their use in hygiene. Theoretical foundations of hygiene, their essence, the contribution of the most prominent domestic hygienists for their scientific substantiation, interpretation and practical use. Biosphere, its components (atmosphere, hydrosphere, lithosphere). The teachings of VI Vernadsky on the noosphere. Atmosphere and its structure. The natural chemical composition of atmospheric air and the hygienic value of its individual components .*	2

2.	Solar radiation, its hygienic value. The use of components of solar radiation in preventive medicine and the issues of biosafety of solar radiation. *Physical bases of solar radiation. The concept of solar activity, "solar wind", interplanetary magnetic field. Interaction of components of solar radiation with the Earth's magnetosphere and atmosphere. Solar spectrum at the boundary of the atmosphere and the earth's surface. The value of the ozone layer of the atmosphere, ozone "holes". The impact of solar activity on the biosphere, the human body and human health. Hygienic value of infrared radiation of the Sun, pathology caused by its excessive action, its prevention. Infrared radiation of artificial origin and the use of its sources in medicine. Hygienic value of visible radiation of the Sun and its use in medicine, devices for determination. Issues of biosafety of solar radiation. Hygienic value of ultraviolet radiation of the Sun.*	2
3.	Weather and climate hygiene. Acclimatization, helioteotropic reactions and their prevention, bioethical principles for assessing the impact of climatic weather conditions on human health. *Weather, definition. Basic laws of weather formation. Weather-forming and weather-characterizing factors. Types of atmospheric circulation. Direct and indirect effects of weather on human health. Medical weather classifications .Helioteotropic reactions of healthy and sick people. Prevention of heliometeotropic reactions. Influence of weather on the dynamics of air pollution. The concept of temperature inversion. Climate, definition. Climate-forming and climate-characterizing factors and indicators. Climatic features of different geographical regions. Climate, health and efficiency. Acclimatization. Phases of acclimatization. Climatotropic reactions of healthy and sick people, their prevention. Bioethical aspects and issues of biosafety of the impact of natural and anthropogenic factors on human health. Biological rhythms and state of health. The concept of biological rhythms. Prerequisites and causes of medical biorhythmology as a science. Basic biorhythmological types. Desynchronosis as the main type of chronopathology. Types of desynchronoses. Biorhythmological principles of rational organization of educational and professional activity. Chronohygiene as a basis for prevention of desynchronoses.*	2
4.	Topical issues of communal hygiene (problems of urbanization, hygiene of housing, microclimate, lighting, heating, ventilation, soil, cleaning of settlements, biosafety of housing). *Housing, social and hygienic problems of housing construction in Ukraine and other countries. Types of residential and public buildings. Hygienic characteristics of construction and finishing materials. Hygienic value of physical properties of air (temperature, humidity and speed of movement). Microclide mat and its hygienic value. Hygienic value of natural and artificial lighting in residential and public premises, their hygienic assessment. Methods for determination and hygienic assessment of dust, chemical and bacteriological air pollution. Basic concepts of types, hygienic value and indicators of ventilation. Adverse physical and chemical factors in the operation of household appliances. Hygiene and biosafety of housing with the use of modern chemical compounds in the home. Urban transport and other adverse environmental factors in the settlement (noise, vibration, electromagnetic fields, air pollution, excessive psychogenic loads, etc.), their sources and measures to eliminate harmful effects.*	2
5.	Water hygiene and water supply. *Water as an environmental factor, its hygienic value. General hygienic requirements for drinking water quality, its organoleptic properties, chemical composition, epidemic safety. Influence of organoleptic properties of drinking water on the level of water consumption and the state of sanitary culture of the population. Water as an etiological factor of diseases of non-infectious nature. Endemic fluorosis, water-nitrate methemoglobinemia. Epidemiological significance of water. Sources of water supply, their comparative hygienic characteristics. Centralized and decentralized water supply systems, their comparative hygienic characteristics. Water purification methods: basic and special. Decentralized water supply system. Hygienic requirements for the arrangement and operation of mine wells and catchments of springs. "Rehabilitation" of wells and disinfection of water in them. General scheme of arrangement of the main structures of the water supply system from underground and surface water supply sources. Causes of water pollution and infection in the water supply*	2

	network; prevention methods. Sanitary supervision of water supply of populated cities. Bioethical aspects and issues of biosafety of water supply sources use. The value of drinking water quality in the biosafety of the population.	
6.	Current issues of occupational health, biosafety in occupational health. *Work and labor, definition of concepts, socio-hygienic significance of labor. Physiology of labor, harmful factors of the labor process. Fatigue and overfatigue, measures to prevent fatigue. The concept of occupational hazards and occupational diseases, their classification. Diseases associated with high levels of mental stress, intensification of production processes. Workplace organization. The concept of difficulty and intensity of work. Ergonomics. Issues of bioethics and biosafety in occupational health. Harmful and dangerous factors of working conditions and production environment. The influence of physical factors of the production environment on the health of workers. Chemical factors of the production environment. Carcinogenic, mutagenic, allergenic factors in production, prevention of their harmful effects. Industrial dust, its classification, prevention of harmful effects. Industrial toxicology. Biological factors in production, prevention of their adverse effects. Occupational poisoning and its prevention.*	2
Module 2. Special problems of hygiene and ecology		
7.	Topical issues of hygiene of children and adolescents. Issues of bioethics and biosafety in the hygiene of children and adolescents. *Environmental factors and social living conditions that affect the formation of the health of children and adolescents. General patterns of growth and development of children and adolescents. Assessment criteria and health indicators for children and adolescents. Physical development as an important criterion for assessing health. Tasks of the doctor concerning the organization and carrying out of improving actions in children's collectives. Factors and conditions of the environment and the educational process affecting health ' I'm children and adolescents. The shift in the state of health ' I and diseases that are caused by the influence of environmental factors and conditions of stay of pupils in schools. Hygienic requirements for the land plot, building and group section of the children's preschool institution. The principle of group isolation and its significance. Hygienic requirements for the land plot and the building of the general educational institution. Hygienic requirements for educational furniture and their physiological justification. The main preventive measures to improve the sanitary and hygienic conditions of students in modern educational institutions. Anatomical-physiological and psychophysiological features of the body of children and adolescents of different ages and genders. The concept of school maturity. Hygienic bases and methods of determining the functional readiness of the child to study at school. The concept of daily routine and basic regime elements. Hygienic requirements for the organization of the educational process in modern secondary schools. Hygienic requirements for school textbooks and manuals. Vocational guidance as a hygienic problem.*	2
8.	Nutrition as a factor of health. Biosafety issues in food hygiene. *Physiological and hygienic bases of nutrition. The importance of nutrition for health and physical development. Alimentary pathology, its prevalence and classification. Theories of nutrition, food functions and types of nutrition. Legislative norms of physiological need for nutrients and energy for different groups of the population, their scientific substantiation. The concept of rational preventive, curative, dietary and curative nutrition and their basic principles. Principles of nutrition of people of different ages, professions, athletes. Physiological and hygienic role of proteins, fats, carbohydrates. Vitamins, mineral salts, flavors, their physiological and hygienic role. Hygienic characteristics of food products. Scientific and technological progress and its impact on food quality. Genetically modified products and socio-hygienic problems associated with their use. Issues of food hygiene in the biosafety of the population.*	2

9.	Diseases associated with the violation of the basics of nutrition and the use of substandard products, their prevention . *Alimentary diseases, their classification. Food poisoning, their classification. Food poisoning of microbial nature. Food poisoning, etiology, pathogenesis, prevention. Bacterial toxicosis. Botulism, etiology, pathogenesis, prevention. Staphylococcal toxicosis, etiology, pathogenesis, prevention. Mycotoxicosis, their etiology, diagnosis, clinic, prevention. Food poisoning of non-microbial nature, products that are toxic in nature, products that have acquired toxic properties under storage conditions, products contaminated with toxic substances (xenobiotics) - heavy metals, pesticides and others. Food poisoning of unknown etiology, hypotheses of their occurrence, features of the clinic. The importance of food chains in the migration of toxic and radioactive substances from various environmental objects to the human body. The effect of residual chemicals in food on public health. Prevention of food poisoning, the responsibilities of the doctor in the investigation of food poisoning and their prevention. Food in an environmentally unfavorable environment and harmful industries. Therapeutic and preventive nutrition. Therapeutic and dietary nutrition. Parenteral nutrition, its hygienic justification. Organization of medical and dietary nutrition in medical and preventive institutions and control over it.*	2
10	Hygiene of medical and preventive institutions and prevention of nosocomial infections. Biosafety issues in the activities of treatment and prevention facilities. *The value of the optimal hygienic regime of treatment and prevention facilities to increase the effectiveness of treatment of patients, prevention of nosocomial infections, creating safe working conditions for staff and their improvement. Modern hospital building systems, their comparative hygienic assessment. Hygienic requirements for land plots of hospitals. Hygienic requirements for planning, equipment and mode of operation of departments: reception, therapeutic, surgical, infectious profile, children's departments, specialized hospitals. Chamber section. Features of planning of boxes, semi-boxes in infectious, children's departments of hospital. Sanitary and anti-epidemic regime in the hospital, clinic. Measures to prevent nosocomial infections. Hygienic requirements for sanitation of patients, their toilets, linen changes. Requirements for the regime of prevention of respiratory and intestinal diseases among patients and staff during epidemics. Removal and neutralization of solid waste, disinfection of sewage in medical institutions. Organization of therapeutic and treatment-and-prophylactic nutrition of patients in hospitals. Bioethical problems of health care of patients and medical workers in treatment and prevention facilities.*	2
11	Current issues of radiation hygiene. Issues of bioethics and biosafety in the use of ionizing radiation. Sanitary protection of the environment from radioactive contamination as a hygienic problem. Hygienic aspects of the Chernobyl disaster. *The urgency of hygienic problems of radiation nature, radiation protection of workers working with industrial sources of ionizing radiation and radiation safety of the population in their places of residence. Bioethical principles of radiation safety of the population. Hygienic characteristics of ionizing radiation and their sources. Biological action of ionizing radiation. Deterministic and stochastic effects of human exposure, conditions of their occurrence. Ionizing radiation as an environmental factor, their sources, their characteristics. Radiation background. Regularities of formation of radiation load of the population, its hygienic assessment, ways of reduction. Issues of bioethics and biosafety in the use of ionizing radiation. Radiation safety of the population in its places of residence, the factors that determine it. Natural radionuclide radon and medical X-ray and radiological diagnostic procedures for the population as the main components of human radiation exposure, their hygienic assessment and special measures to reduce the radiation exposure of people due to these factors. The Chernobyl disaster and its consequences for public health and the environment. Hygienic aspects of life, food, work and leisure of the population living in areas that have been exposed to radioactive contamination. The concept of living in Ukraine with high levels of radioactive contamination due to the Chernobyl disaster.*	2

12	Sanitary protection of the environment from radioactive contamination as a hygienic problem. Hygienic aspects of the Chernobyl accident. *Ionizing radiation as an environmental factor, their sources, their characteristics. Radiation background. Patterns of the formation of radiation exposure of the population, its hygienic assessment, ways of reduction. Issues of bioethics and biosafety when using ionizing radiation. Radiation safety of the population in their places of residence, factors that determine it. The natural radionuclide radon and medical X-ray diagnostic procedures for the population as the main components of human radiation exposure, their hygienic assessment and special measures to reduce the radiation exposure of people due to these factors. The Chernobyl disaster and its consequences for the health of the population and the environment. Hygienic aspects of life, nutrition, work and recreation of the population living in the territories that have undergone radioactive contamination. The concept of population living in the territories of Ukraine* with increased levels of radioactive contamination due to the Chernobyl disaster.	2
13	Healthy lifestyle and personal hygiene. Psychohygiene, medical biorhythmology and chronohygiene. *Healthy lifestyle, definition, content. Body, skin and hair hygiene. Modern detergents, their hygienic assessment. Oral and dental hygiene, means of care for them, their hygienic assessment. Hardening. The main factors of hardening. Principles, methods and means of hardening using natural factors (solar radiation, air, water, etc.). Requirements for the organization, planning and mode of operation of solariums and photorias. Hygienic assessment of steam and dry heat baths. Prevention of hypokinesia. Physical culture as one of the most important elements of personal hygiene in modern conditions. Types of physical culture, hygienic value of morning gymnastics, stay and walks in the fresh air. Organization of hygienic control over the dosage of physical exertion. Negative health effects of active and passive tobacco smoking. Adverse health effects of excessive alcohol consumption, drug addiction and drug addiction, their harmful effects on health.*	2
	Total number of hours	26

Thematic plan of seminar classes by modulees and content modulees, specifying the basic issues, which are considered at the seminar class

The curriculum does not provide for seminar classes.

Thematic plan of practical classes by modulees and content modulees, specifying the basic issues, which are considered at the practical class

№ s / n	Topic	Number of hours
MODULE 1. Common questions of hygiene and ecology		
Content module 1. Introduction to hygiene and ecology		
1	Introductory lesson. Methods of hygienic research. Organization of individual research work of students. Issues of bioethics and biosafety in preventive medicine. *Hygiene as a science, its purpose, tasks, content, connection with other sciences. Ecology as a science, its purpose, tasks, content, connection with other sciences. Preventive orientation of domestic medicine, public and personal prevention, primary, secondary and tertiary, defining priorities. Sanitation as a branch of practical health care. Varieties of sanitation. The value of hygiene knowledge for the formation of professional thinking and practice of doctors of various specialties. Theoretical foundations of hygiene, their essence, the contribution of the most prominent domestic scientists-hygienists for their scientific substantiation, interpretation and practical use. Methods and techniques of hygienic research, their classification. Methods of studying the state of the environment and its hygienic assessment, methods of studying the impact of the environment on human health. Specific methods of hygienic research.*	2
Content module 2. Hygienic value of the environment and methods of its research. Hygiene of settlements and housing. Air hygiene.		
2	Methods for determining the intensity and prophylactic dose of ultraviolet radiation. Methods of using ultraviolet radiation to prevent diseases and rehabilitate the air	2

	environment, biosafety of ultraviolet radiation. *Hygienic value of ultraviolet radiation of the Sun and its use in medicine, devices for determination. Biogenic and abiogenic action of ultraviolet rays. Insufficient and excessive ultraviolet radiation, their negative impact on the body. The concept of erythema and prophylactic dose of ultraviolet radiation. Artificial sources of ultraviolet radiation and their comparative hygienic characteristics. The use of natural and artificial ultraviolet radiation for the prevention of human diseases, prevention of harmful effects of physical, chemical and biological factors. Features of the effect of ultraviolet radiation on the elderly. Features of UVB use for primary and secondary prevention of various diseases in the elderly. Issues of bioethics in the application of ultraviolet radiation. Hygienic value of infrared radiation of the Sun, pathology caused by its excessive action, its prevention. Infrared radiation of artificial origin and the use of its sources in medicine.*	
3	Methods of determination and hygienic assessment of natural lighting. Biosafety of residential and public buildings and structures. *Hygienic value of visible radiation of the Sun and its use in medicine, devices for determination. Issues of biosafety of solar radiation. Hygienic value of natural lighting in residential and public premises, their hygienic assessment.*	2
4	Methods of determination and hygienic assessment of artificial lighting. Biosafety of residential and public buildings and structures. *Hygienic value of visible radiation of the Sun and its use in medicine, devices for determination. Issues of biosafety of solar radiation. Hygienic value of artificial lighting in residential and public premises, their hygienic assessment.*	2
5	Methods of determination and hygienic assessment of temperature and humidity of the premises, the impact on human heat transfer, bioethical aspects. *Hygienic value of physical properties of air (temperature , humidity). Microclimate and its hygienic value. Types and influence of uncomfortable (cooling and heating) microclimate on human heat exchange and health.*	2
6	Methods of determination and hygienic assessment of the direction and speed of air movement, the impact on human heat transfer, bioethical aspects. *Hygienic value of physical properties of air (speed of movement). Microclimate and its hygienic value. Types and influence of uncomfortable (cooling and heating) microclimate on human heat exchange and health.*	2
7	Methods of hygienic assessment and biosafety of complex influence of microclimate parameters on human heat exchange. *Methods and indicators for assessing the complex effect of the microclimate on the human body (physical modeling, effective-equivalent temperatures, the resulting temperatures and others). Features of the influence of the heating microclimate on the elderly, their manifestations and prevention. On the peculiarities of the influence of the cooling microclimate on the elderly, their manifestations and prevention.*	2
8	Methods of hygienic assessment of climatic weather conditions and their impact on human health. Bioethical aspects and issues of biosafety of natural and anthropogenic factors. *Weather, definition. Basic laws of weather formation. Weather-forming and weather-characterizing factors. Direct and indirect effects of weather on human health. Medical weather classifications. Helioteotropic reactions of healthy and sick people. Prevention of heliometeotropic reactions. Influence of weather on the dynamics of air pollution. The concept of temperature inversion. Climate, definition. Climate-forming and climate-characterizing factors and indicators. General and applied classifications of climate. Climatic features of different geographical regions. Climate, health and efficiency. Acclimatization. Phases of acclimatization. Climatotropic reactions of healthy and sick people, their prevention. Use of climate for medical and health purposes.*	2
9	Methods of sanitary and chemical research of indoor air environment and its hygienic assessment. Methods for determining the concentration of CO_2 and air oxidation as indicators of anthropogenic air pollution and ventilation. *Atmosphere and its structure. The natural chemical composition of atmospheric air and the*	2

	hygienic value of its individual components. Oxygen, nitrogen, carbon dioxide, ozone, their biological role. Denaturation of the biosphere. The main sources, types and consequences of anthropogenic air pollution and indoor air. Characteristics of sources of air pollution in the settlement. The impact of polluted air on the health and living conditions of the population. Ways and means of prevention of negative impact of polluted air on health. Basic concepts of types, hygienic value and indicators of ventilation. Necessary and actual volume and frequency of ventilation, their scientific substantiation . The concept of an air cube.	
	Content module 3. Water hygiene and water supply. Soil hygiene, sanitary cleaning of settlements.	
10	Methods of sanitary inspection of water supply sources and water sampling for bacteriological and sanitary-chemical research. *Water as an environmental factor, its hygienic value. Norms of water consumption depending on the level of communal and sanitary improvement of the settlement, living conditions, stay and human activity. Sources of water supply, their comparative hygienic characteristics. Water as an etiological factor of diseases of non-infectious nature. Danger to human health of excessive content in water of various chemicals of natural origin and chemical compounds that fall due to anthropogenic pollution into water sources and drinking water during its purification and other ways to improve quality. The concept of biogeochemical provinces. Endemic fluorosis, water-nitrate methemoglobinemia. Hygienic value of insufficient content of some microelements in water for caries (fluoride), endemic goiter (iodine) and other diseases. Epidemiological significance of water. The role of water and water supply conditions in the spread of infectious diseases. Classification of infectious diseases, the causative agents of which are transmitted by water (cholera, typhoid fever, dysentery, etc.). Centralized and decentralized water supply systems, their comparative hygienic characteristics. Decentralized water supply system. Hygienic requirements for the arrangement and operation of mine wells and catchments of springs. "Rehabilitation" of wells and disinfection of water in them.*	2
11	Methods of hygienic assessment of drinking water according to the sanitary inspection of water supply systems and the results of laboratory analysis of samples. The value of drinking water quality in the biosafety of the population. *General hygienic requirements for drinking water quality, its organoleptic properties, chemical composition, epidemic safety. Influence of organoleptic properties of drinking water on the level of water consumption and the state of sanitary culture of the population. The role of sanitary-indicative microorganisms for assessing the quality of drinking water by bacterial composition (coli-index, coli-titer, microbial count). Scientific substantiation of drinking water quality standards. State sanitary rules and norms of water quality. Methods of water purification: basic (lightening, decolorization and disinfection) and special (deironing, softening, demineralization, deodorization, decontamination, fluorination, defluorination and others). General scheme of arrangement of the main structures of the water supply system from underground and surface water supply sources. Water supply network and its arrangement. Causes of water pollution and infection in the water supply network; prevention methods. Sanitary supervision of water supply of populated cities. Sanitary protection zones of the main water supply facilities. Bioethical aspects and issues of biosafety of water supply sources use. The value of drinking water quality in the biosafety of the population.*	2
12	Methods of hygienic soil assessment according to the sanitary inspection of the land plot and the results of laboratory analysis of samples. Sanitary cleaning of settlements. Importance of sanitary condition of soil and sanitary protection of water objects in biosafety of the population. *Soil, definition. Hygienic assessment of different types of soils. Geochemical, geoendemic characteristics of soils. Sources of soil pollution in modern conditions of industrialization and chemicalization of the national economy. The impact of contaminated soil on the health and sanitary living conditions of the population. The role of soil in the occurrence and spread of infectious diseases (anaerobic infections) and invasions. Soil and diseases of*	2

	non-infectious etiology. Processes and indicators of soil self-cleaning. Assessment of soil sanitation according to chemical and biological indicators. Principles of cleaning settlements. Liquid waste, their classification and sanitary-epidemiological significance. Sewerage of settlements, its importance in the prevention of infectious diseases. Methods of disposal and utilization of industrial and radioactive waste.	
	Content module 4. Occupational health.	
13	Methods of hygienic assessment of the severity and intensity of work in order to prevent fatigue and improve performance. Bioethical aspects of occupational health. *Work and labor, definition of concepts, socio-hygienic significance of labor. Physiology of labor, harmful factors of the labor process. Changes in physiological processes in the human body during work and their physiological and hygienic assessment. Fatigue and overfatigue, measures to prevent fatigue. The concept of occupational hazards and occupational diseases, their classification. Diseases associated with high levels of mental stress, intensification of production processes. Forced body position, tension of individual organs and systems and prevention of diseases associated with them. The concept of difficulty and intensity of work. Ergonomics. Hygienic requirements for the mode of operation. Sanitary legislation on labor protection. (Labor Code of Ukraine). Issues of bioethics and biosafety in occupational health.*	2
14	Methods of hygienic assessment of noise and vibration. Issues of bioethics and biosafety in the prevention of noise and vibration. Methods of determination and hygienic assessment of air dust. Biosafety issues in occupational health. *Harmful and dangerous factors of working conditions and production environment. The influence of physical factors of the production environment on the health of workers. "Noise" disease and its prevention. Vibration disease and its prevention. Industrial microclimate, factors that determine it, the impact of adverse microclimate on the health of workers, preventive measures. Features of occupational hygiene at low and high atmospheric pressure. Altitude, mountain, decompression, caisson diseases, their prevention. Methods for determining dust, chemical contamination of the production environment. Chemical factors of the production environment. Carcinogenic, mutagenic, allergenic factors in production, prevention of their harmful effects. Industrial dust, its classification, prevention of harmful effects. Industrial toxicology. Complex, combined, combined action of industrial hazards. Biological factors in production, prevention of their adverse effects. Issues of bioethics and biosafety in the prevention of harmful and dangerous factors of the production environment.*	2
15	Final module control 1:	2
	Total	30
	MODULE 2. Special problems of hygiene and ecology	
	Content module 5. Hygiene of children and adolescents.	
1	Methods for assessing the health and physical development of children and adolescents. Bioethical problems of bad habits in adolescents. *Environmental factors and social living conditions that affect the formation of the health of children and adolescents.* *General patterns of growth and development of children and adolescents. Assessment criteria and health indicators for children and adolescents. Methods of comprehensive assessment of the health of children and adolescents. Features of the distribution of children and adolescents by health groups. Physical development as an important criterion for assessing health. The main indicators of physical development. Rules of anthropometry. Requirements for tables of regional standards of physical development. The concept of biological and calendar age. Indicators of the level of biological development of children and adolescents. Modern ideas about epochal and intra-age acceleration and deceleration (retardation). Methods for assessing the physical development of children and adolescents (the method of sigma deviations, regression scales, complex and centile methods). Methods of assessing the state of health and physical development of organized children's groups. Tasks of the doctor concerning the*	2

	organization and carrying out of improving actions in children's collectives. *Child and adolescent health management system. The role of the family doctor in the formation of favorable hygienic conditions for the upbringing and education of the child.*	
2	Methods of hygienic assessment of equipment and maintenance of educational institutions for children and adolescents. *Factors and conditions of the environment and the educational process affecting health ' I'm children and adolescents. The shift in the state of health ' I and diseases that are caused by the influence of environmental factors and conditions of stay of pupils in schools. Hygienic requirements for the land plot, building and group section of the children's preschool institution. The principle of group isolation and its significance. Hygienic requirements for the land plot and the building of the general educational institution. The principle of functional zoning and its significance. Hygienic requirements for planning, arrangement, equipment, microclimate, ventilation, lighting and sanitation of the main premises of educational institutions. Hygienic requirements for educational furniture and their physiological justification. Rules for marking desks, other school furniture and seating students. Hygienic requirements for the placement of school furniture in the school classroom. The main preventive measures to improve the sanitary and hygienic conditions of students in modern educational institutions.*	2
3	Methods of studying age-related psychophysiological characteristics of children and adolescents. Hygienic evaluation of the educational and educational regime of children of different age groups. *Anatomical-physiological and psychophysiological features of the body of children and adolescents of different age and sex groups. Medical, physiological and psychological-pedagogical criteria for assessing the level of child development. Methods of studying age-related psychophysiological features of the body of children and adolescents. Changes in the state of health and diseases caused by the irrational organization of the educational process. The concept of school maturity. Hygienic basics and methods of determining a child's functional readiness to study at school. The concept of daily routine and basic routine elements. Peculiarities of hygienic regulation of students' daily activities. Hygienic principles of compiling and evaluating the daily routine of children and adolescents of different age groups. Hygienic requirements for the organization of the educational process in modern general education institutions. Hygienic requirements for the schedule of classes at school and the method of its assessment. Hygienic requirements for the organization and methods of conducting the lesson. Peculiarities of teaching six-year-old children.*	2
	Content modulee 6. Hygiene of nutrition.	
4	Methods of studying and assessing human nutritional status. Bioethical aspects of human nutritional status assessment. *Physiological and hygienic bases of nutrition. The importance of nutrition for health and physical development. Alimentary pathology, its prevalence and classification. Theories of nutrition, food functions and types of nutrition. The concept of nutritional status of the organism and methods of its assessment. Legislative norms of physiological need for nutrients and energy for different groups of the population, their scientific substantiation. Bioethical aspects of human nutritional status assessment.*	2
5	Methods for calculating human energy consumption and nutrient needs. *The concept of rational preventive, curative, dietary and curative nutrition and their basic principles. Methods for determining human energy consumption and needs in essential nutrients. Methods for determining the energy consumption of an elderly person and his needs for essential nutrients. Legislative norms of physiological need for nutrients and energy for different groups of the population, their scientific substantiation.*	2
6-7	Methods of assessing the adequacy of nutrition of organized teams on the menu layout and bioethical principles of nutrition . *Methods of assessing the adequacy of nutrition. Methods for assessing adequate nutrition according to the menu layout, provision of vitamins. Methods and means of medical*	4

	control over the nutrition of certain age groups. Principles of nutrition of people of different ages, professions, athletes.	
8-9	Physiological and hygienic value of nutrients and hygienic characteristics of food products. *Physiological and hygienic role of proteins. Scientific substantiation of protein needs. Hygienic characteristics of proteins of animal and vegetable origin. Protein quality indicators. Sources of proteins and essential amino acids. Physiological and hygienic role of fats. Quality indicators of fats of different origin. Physiological and hygienic role of polyunsaturated fatty acids, phosphatides, sterols. Scientific substantiation of the body's needs for fats. Sources of fats. Cooking fats. "Overheated fats". Physiological and hygienic role of carbohydrates. Scientific substantiation of the body's needs for simple and complex carbohydrates. Carbohydrate quality indicators. Sources of carbohydrates. The concept of refined and "protected" carbohydrates. Vitamins, mineral salts, flavors, their physiological and hygienic role. Sources of vitamins and minerals. Micro- and macroelementosis, their clinical manifestations and prevention. Hygienic characteristics of food products. Sanitary examination of food products. Cereals, legumes and oilseeds, vegetables, fruits and berries. Meat and meat products. Fish, poultry and other foods. Eggs. Milk and dairy products. Milk fats. Scientific and technological progress and its impact on food quality. Genetically modified products and socio-hygienic problems associated with their use. Issues of food hygiene in the biosafety of the population.*	4
10	Methods of investigating cases of food poisoning. Issues of bioethics and biosafety in the investigation of food poisoning. *Alimentary diseases, their classification. Food poisoning, their classification. Food poisoning of microbial nature. Food poisoning, etiology, pathogenesis, prevention. Bacterial toxicosis. Botulism, etiology, pathogenesis, prevention. Staphylococcal toxicosis, etiology, pathogenesis, prevention. Mycotoxicosis, their etiology, diagnosis, clinic, prevention. Food poisoning of non-microbial nature, products that are toxic in nature, products that have acquired toxic properties under storage conditions, products contaminated with toxic substances (xenobiotics) - heavy metals, pesticides and others. Food poisoning of unknown etiology, hypotheses of their occurrence, features of the clinic. Prevention of food poisoning of microbial, non-microbial nature and unknown etiology, responsibilities of the doctor in the investigation of food poisoning and their prevention. Instructional and legislative documents used in the investigation of food poisoning and their prevention. The role of aerogenic, purulent diseases, healthy carriers of intestinal pathogens among the staff of food units in the occurrence of food poisoning of microbial nature and infections. Issues of bioethics and biosafety in the investigation of food poisoning.*	2
	Content modulee 7. Hygiene of medical care institutions. Radiation hygiene.	
11-12	Hygienic assessment of the location and planning of individual structural units of the hospital according to the project materials, biological safety in treatment and prevention facilities. *The value of the optimal hygienic regime of treatment and prevention facilities to increase the effectiveness of treatment of patients, prevention of nosocomial infections, creating safe working conditions for staff and their improvement. Modern hospital building systems (centralized, block, decentralized, pavilion, mixed), their comparative hygienic assessment, prospects for improvement. Hygienic requirements for land plots of hospitals. Situational and general plans of hospitals, hygienic requirements for the main indicators of development (distance from sources of air pollution, soil, area, density of buildings and landscaping, placement of buildings, sanitation of the site), functional zoning. Hygienic requirements for planning, equipment and mode of operation of departments: reception (for somatic, infectious, pediatric departments), therapeutic, surgical, infectious profile, children's departments, specialized hospitals (psychoneurological, tuberculosis and others). Ward section, its composition, hospital ward, options for its planning and equipment for somatic patients, infectious, mental, resuscitation, rehabilitation. Features of planning of boxes, semi-boxes in infectious, children's departments of hospital. Hygienic*	4

	requirements for the area, cubature of chambers, their scientific substantiation. Requirements for the orientation of the windows of the chambers, microclimate, air, lighting, heating, ventilation, noise. Standards of lighting, microclimate, carbon dioxide content as an indicator of chemical air pollution, bacterial contamination.	
13-14	Hygienic assessment of the conditions of stay of patients and occupational hygiene of medical workers in treatment and prevention facilities. *Sanitary and anti-epidemic regime in the hospital, clinic. Measures to prevent nosocomial infections. Hygienic requirements for sanitation of patients, their toilets, linen changes. Requirements for the regime of prevention of respiratory and intestinal diseases among patients and staff during epidemics.* *Mode, methods and means of wet cleaning with the use of antiseptics, ventilation, isolation of patients. Removal and neutralization of solid waste, disinfection of sewage wastewater in medical institutions, their features in rural hospitals, separately located health facilities. Organization of therapeutic and treatment-and-prophylactic nutrition of patients in hospitals. Bioethical problems of health care of patients and medical workers in treatment and prevention facilities.*	4
15	Methods and means of radiation control and radiation protection of workers with sources of ionizing radiation and the population in their places of residence. Bioethical principles of radiation safety of the population . *Physical foundations of radiation safety and radiation protection: the essence and nature of radioactivity, types of nuclear transformations, ionizing radiation, the occurrence of which they are accompanied, their qualitative and quantitative characteristics, use in practice. Qualitative and quantitative characteristics of radionuclides. Hygienic characteristics of ionizing radiation and their sources. The essence and features of the interaction of ionizing radiation with substances, the practical use of this knowledge. Biological action of ionizing radiation, its features and basic conditions on which it depends. Deterministic and stochastic effects of human exposure, conditions of their occurrence. Ionizing radiation as an environmental factor, their sources (natural, man-made, industrial, industrial), their characteristics. Radiation background. Regularities of formation of radiation load of the population, its hygienic estimation, ways of decrease. Questions of bioethics and biosafety at application of ionizing radiation.*	2
16	Hygienic assessment of radiation protection of personnel and radiation safety and biosafety of patients with the use of radionuclides and other sources of ionizing radiation in medical institutions. *Ionizing radiation as an industrial hazard. Conditions on which the radiation hazard depends when working with radionuclides and other sources of ionizing radiation. Closed sources of ionizing radiation, their purpose, features of radiation danger and radiation protection when working with them. Open sources of ionizing radiation, their purpose, features of radiation danger and radiation protection when working with them . Radiation protection of personnel and radiation safety of patients in radiological departments of medical institutions. Features of radiation safety and radiation protection in the structural units of the radiology department of the hospital.* *Radiation and medical control at work with radionuclides and other sources of ionizing radiation, its organizational forms, types, programs, devices, criteria for evaluating the results, guidelines.*	2
	Content module 8.	
17	Psychohygienic foundations of everyday human activity. *Basics of psychohygiene. Psychoprophylaxis. Peculiarities of the impact of hereditary and environmental factors on the mental health of children and adolescents. The structure of human characteristics (characteristics of temperament and character, motivational orientation, peculiarities of neuropsychological state, etc.). Psychohygienic principles of rational organization of educational and professional activities. Iatrogenic, therapeutic and prophylactic meaning of the word in everyday life, at work, in the relationship between a doctor and a patient. Self-training. Hygiene of mental and operator work. Psychohygienic foundations of the scientific organization of work. The concept of active*	2

	and passive recreation. Sleep hygiene.	
18	Scientific foundations of medical biorhythmology and chronohygiene. *The concept of biological rhythms. Biological rhythms and health. Prerequisites and reasons for the emergence of medical biorhythmology as a science. Basic biorhythmic types. Desynchronosis as the main type of chronopathology. Types of desynchronosis. Biorhythmological principles of rational organization of educational and professional activities. Combination of the time of training classes with the time of optimum physiological functions of the body. Motor activity as a synchronizer of biological rhythms. Rational organization of free time as an important factor in the implementation of the amplitude-phase program of biorhythms. Chronohygiene as a basis for the prevention of desynchronosis.*	2
19	Hygienic assessment of detergents, fabrics and household, industrial and hospital clothes. *Hygiene of clothes and shoes. Hygienic requirements for different types of fabrics. Comparative hygienic characteristics of clothes and shoes made of natural and artificial fabrics and materials. Requirements for clothing and footwear for different age groups of the population. Physico-chemical indicators that characterize the hygienic properties of fabrics for clothing of the elderly. Hygienic requirements for different layers of clothing for the elderly. Personal hygiene products, methods of their research and evaluation. Hygienic assessment of modern detergents.*	2
20	Final module control 2:	2
	Total	40
	Module 3. Hygiene and Human Ecology	
1	Water hygiene and water supply of settlements. Sanitary protection of water bodies. *Hygienic indicators and standards of drinking water quality (physical, organoleptic, chemical composition) and indicators of pollution (chemical, bacteriological - direct and indirect), their scientific substantiation. The concept and characteristics of centralized (drinking water supply) and decentralized (wells, catchments) water supply systems. Hygienic characteristics of generally accepted and special methods of improving water quality, technical means of their implementation at the main water supply facilities with centralized water supply systems. The scope of measures for sanitary supervision over the operation of the main structures of the water supply system (its individual elements and the water supply network), wells, catchments.*	2
2	Sanitary protection of atmospheric air. Hygiene of settlement planning. Hygiene of residential and public buildings and structures. *Assessment of air quality and the method of determining risk indicators and the impact of pollutants on health of population. The main air pollutants in the settlements. System of measures for prevention of air pollution. Principles of hygienic regulation of air pollutants. Hygienic standardization of pollutants in the air. The impact of air pollution on public health. Methods for determining the impact of atmospheric quality on public health. Housing as a factor in shaping individual health. The main hygienic significant factors of housing and their hygienic assessment. Methods of instrumental research of the main indicators of the living environment. Prevention of diseases caused by household factors.*	2
3	Hygienic value of physical factors in the conditions of settlements. *The main sources of municipal noise and vibration in populated areas, their comparative hygienic characteristics. Impact of noise and vibration on public health. Hygienic justification of permissible noise and vibration levels. The main sources of electromagnetic fields (EMF), their hygienic characteristics. The impact of EMF on public health. System of measures to reduce and prevent the negative impact of noise, vibration and EMF on public health, working and leisure conditions.*	2
4	Nutrition in preventive medicine. The organization of food in health care facilities and industrial enterprises. *Food functions and factors that provide them. Theories and concepts of nutrition. Importance*	2

	in the nutrition of the nutritional composition of diets (proteins, fats, carbohydrates, vitamins and minerals). Basic hygienic requirements for the construction of human nutrition. Calculation of energy costs and energy value of food. Hygienic characteristics of the food set, chemical composition and energy value of therapeutic and prophylactic and therapeutic (dietary) nutrition.	
5	Legislative bases of sanitary supervision in the field of occupational health. *Fundamentals of Ukrainian legislation in the field of occupational health and safety. Fundamentals of medical (sanitary) supervision over working conditions at the enterprise, observance of sanitary norms and rules, prevention of occupational diseases and poisonings. Methods and means of prevention of intoxications, the main criteria of hygienic regulation of chemical compounds in the air of the working area, other environments.*	2
6	Physical development as an important criterion for assessing the health of children and adolescents. *Leading environmental factors and social living conditions that affect the health of children and adolescents. The main patterns of growth and development and features of the morphofunctional state of children and adolescents. Methods for assessing the health and physical development of children and adolescents and criteria for their division into health groups. Determination of health groups, somatometric, somatoscopic and physiometric indicators of physical development of children and adolescents. Assessment of physical development of children and adolescents.*	2
7	Features of hygienic requirements for the planning and operation of health care facilities. *The main legislative and regulatory materials governing the requirements for the location and planning of health care facilities. Basic sanitary and hygienic requirements to the planning and mode of operation of health care facilities and departments of therapeutic, surgical, infectious profile and specialized departments. Definition and assessment according to construction drawings of situational and general plans of placement and zoning of the territory of the projected medical and preventive establishments taking into account objects surrounding the land plot and "wind roses", conformity to norms of percent of building, gardening, orientation of buildings. Determination and assessment according to the plans and sections of buildings compliance with the hygienic standards of the area, volume, sanitation of hospital premises, their compliance with the functional purpose .*	2
8	Occupational health of medical workers in health care facilities. *Hygienic significance of planning, equipment, optimal mode of operation of treatment and prevention facilities as conditions for creating safe working conditions for medical staff. Occupational hazards, hygiene and labor health personnel departments of various hospitals (surgical, therapeutic profile, infectious diseases, neuropsychiatric and other). Occupational hazards, hygiene and labor protection of medical staff of diagnostic, physiotherapeutic, balneological, resuscitation and other specific departments and laboratories of the hospital. Legislative and organizational measures for the protection of health workers. Personal hygiene of medical staff in the health care system and ensuring favorable working conditions and prevention of internal and root infections and occupational diseases.*	2
9	Regularities of formation of human radiation load in places of residence, its hygienic assessment, and ways of reduction. Radiation hazard and radiation protection at facilities with radiation and nuclear technologies. *Qualitative and quantitative characteristics of ionizing radiation. Sources of ionizing radiation, their distribution in the environment. Methods of application of radionuclides and other sources of ionizing radiation in production, medicine, in scientific researches. Biological action of ionizing radiation and conditions on which it depends. The essence of radiation hazard when working with radionuclides and other sources of ionizing radiation in various industries. Principles of hygienic standardization of radiation safety and norms of radiation safety (NRBU-97) and Basic sanitary rules of ensuring radiation safety of Ukraine (OSPRBU-05). Classification of types and devices of radiation control, principles of operation of these devices.*	2
10	Final module control 3	2

	Total	20
	Total number of hours	90

Self-directed work

Seq. No.	Title of the topic	Number of hours
Module 1. Common questions of hygiene and ecology		
1	*Preparing to practical lessons of 1 module* (theoretical knowledge and mastering of practical skills)	28
2	*Elaboration of topics that are not part of the classroom lesson plan* (a list indicating the main issues to be studied)	10
2.1	History of origin, main stages of development and current state of hygiene. *An empirical stage in the history of hygiene. Empirical hygiene in the countries of the Ancient East, China, Greece, Ancient Rome. Sanitary culture of Kievan Rus during the empirical stage of hygiene development. Scientific and experimental stage of hygiene development. Development of hygienic science in Ukraine. History of origin, main stages of development and current state of ecology. International cooperation in hygienic and ecological sciences in the modern period.*	2
2.2	Methods and means of purification, disinfection of water with centralized and decentralized water supply. *Methods of water purification: basic (lightening, decolorization and disinfection) and special (deironing, softening, demineralization, deodorization, decontamination, fluorination, defluorination and others).*	2
2.3	Modern methods of removal and disposal of household and industrial waste. *Principles of cleaning settlements. Systems and facilities for temporary storage, removal, disposal and utilization of solid and liquid waste of domestic and industrial origin. Liquid waste, their classification and sanitary-epidemiological significance. Sewerage of settlements, its importance in the prevention of infectious diseases. Wastewater treatment and sanitary protection of reservoirs. Scientific bases of protection of open reservoirs. The concept of small sewerage and conditions of its use. Features of collection, temporary storage, removal and disposal of waste from treatment and prevention facilities (wastewater, waste from surgical, infectious and other departments). Methods of disposal and utilization of industrial and radioactive waste. Hygienic requirements for places and types of burial of the dead. Hygienic characteristics of cremation.*	2
2.4	Methods of hygienic assessment of dangerous and harmful factors of the production environment and the body's response to their impact. Sanitary legislation on labor protection. *Harmful and dangerous factors of working conditions and production environment. The influence of physical factors of the production environment on the health of workers. Chemical factors of the production environment. Carcinogenic, mutagenic, allergenic factors in production, prevention of their harmful effects. Industrial dust, its classification, prevention of harmful effects. Industrial toxicology. Complex, combined, combined action of industrial hazards. Biological factors in production, prevention of their adverse effects. Hygienic requirements for heating, ventilation and lighting of industrial premises. Methods and means of prevention of occupational injuries. Issues of bioethics and biosafety in the prevention of harmful and dangerous factors of the production environment. Sanitary legislation on labor protection. (Labor Code of Ukraine). Issues of bioethics and biosafety in occupational health.*	2
2.5	Methods of investigating cases of occupational diseases and poisonings. Preliminary and periodic medical examinations as measures for their prevention. *Occupational poisoning and its prevention. Hygienic requirements for heating, ventilation and lighting of industrial premises. Methods and means of prevention of occupational injuries. Issues of bioethics and biosafety in the prevention of harmful and dangerous*	2

	factors of the production environment. Occupational hygiene in the main industries of industrial and agricultural production, women and adolescents, the elderly and the disabled. Means of individual protection against harmful and dangerous factors of the production environment (protection of body, sight, hearing, respiratory organs).	
3	Preparation to the final module control 1	4
	Total	42
Module 2. Special problems of hygiene and ecology		
1	*Preparing to practical lessons of module 2* (theoretical knowledge and mastering of practical skills)	38
2	Preparation to the final module control 2	4
	Total	42
Module 3. Hygiene and Human Ecology		
1	*Preparing to practical lessons of 1 module* (theoretical knowledge and mastering of practical skills)	26
2	*Elaboration of topics that are not part of the classroom lesson plan* (a list indicating the main issues to be studied)	10
2.1	Methodological and methodical bases of studying the influence of a complex of environmental factors on the health of the population. Hygienic assessment of the potential risk of environmental factors on the human body and public health. *The value of hygiene knowledge for the formation of professional thinking and practice of physicians. Subject methodology of hygiene. Methods and techniques of hygienic research, their classification. Specific methods of hygienic research. Methods of studying the state of the environment and its hygienic assessment. Methods of qualitative (conceptual) analysis of the state of the environment and "normalized" forecasting of changes in the level of health of the population according to the state of air, water and soil pollution. Methods of quantitative analysis of the environment. Methods of studying the impact of the environment on human health. Population health as an integral criterion for assessing the state of the environment. The general scheme of studying the impact of a set of environmental factors on the health of the population. General scheme of study and assessment of the relationship between environmental factors and public health.*	2
2.2	Hygienic assessment of the potential risk of environmental factors on the human body and public health. *Risk assessment methodology. Characteristics of the problem and basic terms. The main stages of the risk assessment methodology. Identification of harmful factor (factors). Exposure assessment. Dose-response dependence assessment. Estimation of dose-response relationship for non-carcinogens. Estimation of dose-response relationship for carcinogens. Biomarkers. Indicators of action, effect, propensity. Risk characteristics. The relationship between risk assessment and risk management. Risk management and hygienic rationing. Problems of application of risk assessment methodology in Ukraine.*	2
2.3	Sanitary and hygienic control of public nutrition. *Pathogenetic principles of construction of dietary therapeutic nutrition. List of basic diets for patients in health care facilities. Principles of organization of dietary (medical) nutrition in hospitals and sanatoriums. Sanitary and hygienic control over the organization of dietary nutrition in the system of medical nutrition in the health care facilities.*	2
2.4	Hygienic bases of labor training of children and teenagers. Scientific bases of medical and professional consultation. *Hygienic principles of rational organization of labor and polytechnic education of children and adolescents. Physiological and hygienic bases of control over labor training of schoolchildren. Hygienic requirements to the content, mode and conditions of the organization and carrying out of labor training in the conditions of various types of modern educational institutions. Vocational guidance as a hygienic problem. Psychophysiological aspects of professional self-determination. Professiography. Modern system of professional orientation, its functions and leading components. Scientific bases*	2

	of medical and professional consultation. The concept of professional selection. Methods for predicting professional success.	
2.5	Hygienic aspects of the population living in areas with high levels of radioactive contamination due to the Chornobyl accident. *Methods of application of radionuclides and other sources of ionizing radiation in medical institutions for diagnostic and therapeutic purposes. Regularities of biological action of ionizing radiation. The essence of radiation hazard when working with radionuclides and other sources of ionizing radiation. Principles and means of radiation protection. Classifications of radiation accidents and features of the Chernobyl accident. The essence of the "Concept of living of the population of Ukraine in areas with high levels of radioactive contamination" and the Law of Ukraine "On the legal regime of territories affected by radioactive contamination as a result of the Chernobyl accident."*	2
3	Preparation to the final module control 3	4
	Total	40
	Total number of hours	124

Individual tasks

The individual teaching and research task is performed independently or as part of working groups (2-3 students) in consultation with the teacher during the study of the discipline.

The main forms of individual tasks:

• bibliographic search and study of literature on a particular topic, its generalization, review of the current state of the problem (writing an abstract), presentation at a meeting of the department, student scientific conferences, etc .;

• participation in the creation of training and demonstration manuals (stands, albums, tables) and other technical teaching aids;

• mastering the latest research methods, devices, performing educational and practical student work;

• performance of a thematic task of research nature (participation in experimental scientific research of the department).

The list of theoretical questions for students' preparation for the final module control of the module 1 "Common questions of hygiene and ecology" for 2 course:

1. Hygiene as a science, its purpose, tasks, content, connection with other sciences.
2. Ecology as a science, its purpose, tasks, content, connection with other sciences.
3. Preventive orientation of domestic medicine, public and personal prevention, primary, secondary and tertiary, defining priorities.
4. Sanitation as a branch of practical health care. Varieties of sanitation.
5. The value of hygiene knowledge for the formation of professional thinking and practice of doctors of various specialties.
6. The concept of methodology as a doctrine of scientific knowledge of reality. Fundamentals of hygiene methodology: general philosophical laws and categories, their use in hygiene.
7. Theoretical foundations of hygiene, their essence, the contribution of the most prominent domestic scientists-hygienists for their scientific substantiation, interpretation and practical use.
8. Methods and techniques of hygienic research, their classification. Methods of studying the state of the environment and its hygienic assessment, methods of studying the impact of the environment on human health. Specific methods of hygienic research.
9. Physical bases of solar radiation. The concept of solar activity, "solar wind", interplanetary magnetic field. Interaction of components of solar radiation with the Earth's magnetosphere and atmosphere. Solar spectrum at the boundary of the atmosphere and the earth's surface. The value of the ozone layer of the atmosphere, ozone "holes". The impact of solar activity on the biosphere, the human body and human health.
10. Hygienic value of infrared radiation of the Sun, pathology caused by its excessive action, its prevention. Infrared radiation of artificial origin and the use of its sources in medicine.
11. Hygienic value of visible radiation of the Sun and its use in medicine, devices for determination. Issues of biosafety of solar radiation.
12. Hygienic value of ultraviolet radiation of the Sun and its use in medicine, devices for determination. Biogenic and abiogenic action of ultraviolet rays. Insufficient and excessive ultraviolet radiation,

their negative impact on the body. The concept of erythema and prophylactic dose of ultraviolet radiation. Artificial sources of ultraviolet radiation and their comparative hygienic characteristics. The use of natural and artificial ultraviolet radiation for the prevention of human diseases, prevention of harmful effects of physical, chemical and biological factors. Features of the effect of ultraviolet radiation on the elderly. Features of UVB use for primary and secondary prevention of various diseases in the elderly. Issues of bioethics in the application of ultraviolet radiation.

13. Biosphere, its components (atmosphere, hydrosphere, lithosphere). The teachings of VI Vernadsky on the noosphere.

14. Atmosphere and its structure. The natural chemical composition of atmospheric air and the hygienic value of its individual components. Oxygen, nitrogen, carbon dioxide, ozone, their biological role. Atmospheric pressure and its effect on the body. Electrical state of the atmosphere (air ionization, electric field of the Earth, geomagnetic field, electromagnetic fields of radio frequencies and others), its hygienic value.

15. Denaturation of the biosphere. The main sources, types and consequences of anthropogenic air pollution and indoor air. Characteristics of sources of air pollution in the settlement. Regularities of the spread of pollution in the atmosphere. Transformation of chemicals in atmospheric air. The impact of polluted air on the health and living conditions of the population. Direct effect on the body: acute poisoning, chronic specific and nonspecific diseases. Indirect action due to atmospheric circulation, attenuation of ultraviolet radiation, reduction of light levels, etc. Ways and means of prevention of negative impact of polluted air on health. Bioethical aspects and issues of biosafety of denaturation of the biosphere.

16. Weather, definition. Basic laws of weather formation. Weather-forming and weather-characterizing factors. Direct and indirect effects of weather on human health. Medical weather classifications. Helioteotropic reactions of healthy and sick people. Prevention of heliometeotropic reactions: permanent, seasonal, urgent. Influence of weather on the dynamics of air pollution. The concept of temperature inversion.

17. Climate, definition. Climate-forming and climate-characterizing factors and indicators. General and applied (medical, construction) classifications of climate. Acclimatization. Phases of acclimatization. Climatotropic reactions of healthy and sick people, their prevention. Features of acclimatization in the polar regions, deserts, highlands, dry and humid tropics. Use of climate for medical and health purposes. Bioethical aspects and issues of biosafety of the impact of natural and anthropogenic factors on human health.

18. Housing, social and hygienic problems of housing construction in Ukraine and other countries. Types of residential and public buildings. Hygienic characteristics of construction and finishing materials.

19. Hygienic value of physical properties of air (temperature, humidity and speed of movement). Microclimate and its hygienic value. Types and influence of uncomfortable (cooling and heating) microclimate on human heat exchange and health. Methods and indicators for assessing the complex effect of the microclimate on the human body (physical modeling, effective-equivalent temperatures, the resulting temperatures and others).

20. Hygienic value of natural and artificial lighting in residential and public premises, their hygienic assessment.

21. Methods for determination and hygienic assessment of dust, chemical and bacteriological air pollution. Basic concepts of types, hygienic value and indicators of ventilation. Necessary and actual volume and frequency of ventilation, their scientific substantiation. The concept of an air cube.

22. Adverse physical and chemical factors in the operation of household appliances. Hygienic characteristics of natural and synthetic building and finishing materials and products from them. Hygiene and biosafety of housing with the use of modern chemical compounds in the home.

23. Urban transport and other adverse environmental factors in the settlement (noise, vibration, electromagnetic fields, air pollution, excessive psychogenic loads, etc.), their sources and measures to eliminate harmful effects.

24. Hygienic features of planning and development of rural settlements. Sanitary equipment of rural housing. Ways to increase the level of communal conditions for rural residents.

25. Biosafety of residential and public buildings and structures.

26. Water as an environmental factor, its hygienic value. Norms of water consumption depending on the level of communal and sanitary improvement of the settlement, living conditions, stay and human activity.

27. General hygienic requirements for drinking water quality, its organoleptic properties, chemical composition, epidemic safety.

28. Influence of organoleptic properties of drinking water on the level of water consumption and the state of

sanitary culture of the population.
29. Water as an etiological factor of diseases of non-infectious nature. Danger to human health of excessive content in water of various chemicals of natural origin and chemical compounds that fall due to anthropogenic pollution. The concept of biogeochemical provinces. Endemic fluorosis, water-nitrate methemoglobinemia.
30. Hygienic value of insufficient content of some microelements in water for caries (fluoride), endemic goiter (iodine) and other diseases.
31. Epidemiological significance of water. The role of water and water supply conditions in the spread of infectious diseases. Classification of infectious diseases, the causative agents of which are transmitted by water (cholera, typhoid fever, dysentery, etc.). The role of sanitary-indicative microorganisms for assessing the quality of drinking water by bacterial composition (coli-index, coli-titer, microbial count).
32. Sources of water supply, their comparative hygienic characteristics.
33. Centralized and decentralized water supply systems, their comparative hygienic characteristics. Scientific substantiation of drinking water quality standards. State sanitary rules and norms of water quality. Methods of water purification: basic (lightening, decolorization and disinfection) and special (deironing, softening, demineralization, deodorization, decontamination, fluorination, defluorination and others).
34. Decentralized water supply system. Hygienic requirements for the arrangement and operation of mine wells and catchments of springs. "Rehabilitation" of wells and disinfection of water in them.
35. General scheme of arrangement of the main structures of the water supply system from underground and surface water supply sources. Water supply network and its arrangement. Causes of water pollution and infection in the water supply network; prevention methods. Sanitary supervision of water supply of populated cities. Sanitary protection zones of the main water supply facilities. Bioethical aspects and issues of biosafety of water supply sources use. The value of drinking water quality in the biosafety of the population.
36. Soil, definition. Origin, formation, mechanical structure, physical properties and chemical composition of soil. Hygienic assessment of different types of soils. Geochemical, geoendemic characteristics of soils.
37. Sources of soil pollution in modern conditions of industrialization and chemicalization of the national economy. The impact of contaminated soil on the health and sanitary living conditions of the population. The role of soil in the occurrence and spread of infectious diseases (anaerobic infections) and invasions. Soil and diseases of non-infectious etiology. Processes and indicators of soil self-cleaning. Assessment of soil sanitation according to chemical and biological indicators.
38. Theoretical bases and methods of hygienic rationing - maximum permissible concentrations of harmful chemicals in the soil. Importance of sanitary condition of soil and sanitary protection of water objects in biosafety of the population.
39. Principles of cleaning settlements. Systems and facilities for temporary storage, removal, disposal and utilization of solid and liquid waste of domestic and industrial origin.
40. Liquid waste, their classification and sanitary-epidemiological significance.
41. Sewerage of settlements, its importance in the prevention of infectious diseases. Influence of sewerage of settlements on sanitary condition of soil and living conditions of the population.
42. General scheme and facilities for domestic wastewater treatment. Wastewater treatment and sanitary protection of reservoirs. Scientific bases of protection of open reservoirs. The concept of small sewerage and conditions of its use.
43. Features of collection, temporary storage, removal and disposal of waste from treatment and prevention facilities (wastewater, waste from surgical, infectious and other departments).
44. Methods of disposal and utilization of industrial and radioactive waste. Hygienic requirements for places and types of burial of the dead. Hygienic characteristics of cremation.
45. Work and labor, definition of concepts, socio-hygienic significance of labor. Physiology of labor, harmful factors of the labor process. Changes in physiological processes in the human body during work and their physiological and hygienic assessment.
46. Fatigue and overfatigue, measures to prevent fatigue.
47. The concept of occupational hazards and occupational diseases, their classification.
48. Diseases associated with high levels of mental stress, intensification of production processes.
49. Workplace organization. Monotony of work, its prevention. Forced body position, tension of individual organs and systems and prevention of diseases associated with them. The concept of difficulty and intensity of work. Ergonomics.
50. Physiological and hygienic features of the work of an elderly person. Indicators of the severity and

intensity of work of the elderly and their changes during employment. The influence of adverse factors of the production environment on the rate of aging of the employee.
51. Hygienic requirements for the mode of operation. Sanitary legislation on labor protection. (Labor Code of Ukraine). Issues of bioethics and biosafety in occupational health.
52. Harmful and dangerous factors of working conditions and production environment. Influence of physical factors of the production environment (noise, vibration, high-frequency electromagnetic oscillations, etc.) on the health of workers.
53. "Noise" disease and its prevention. Vibration disease and its prevention.
54. Industrial microclimate, factors that determine it, the impact of adverse microclimate on the health of workers, preventive measures.
55. Features of occupational hygiene at low and high atmospheric pressure. Altitude, mountain, decompression, caisson diseases, their prevention.
56. Methods for determining dust, chemical contamination of the production environment.
57. Chemical factors of the production environment. Carcinogenic, mutagenic, allergenic factors in production, prevention of their harmful effects.
58. Industrial dust, its classification, prevention of harmful effects. Industrial toxicology. Complex, combined, combined action of industrial hazards.
59. Biological factors in production, prevention of their adverse effects.
60. Hygienic requirements for heating, ventilation and lighting of industrial premises. Methods and means of prevention of occupational injuries. Issues of bioethics and biosafety in the prevention of harmful and dangerous factors of the production environment.
61. MR rofesiyni poisoning and its prevention.
62. Occupational hygiene in the main industries of industrial and agricultural production, women and adolescents, the elderly and the disabled.
63. Means of individual protection against harmful and dangerous factors of the production environment (protection of body, sight, hearing, respiratory organs).

The list of practical skills required fo the final module control of the module 1 "Common questions of hygiene and ecology" for 2 course:
1. Measure and evaluate the indicators of the microclimate (temperature, humidity, air velocity, radiation temperature).
2. Measure the absolute and relative humidity.
3. Determine the speed of air movement.
4. Determine the radiation temperature.
5. Determine the indicators of artificial lighting (lighting, brightness, etc.) using a luxmeter.
6. Determine the intensity of ultraviolet radiation by biological and photochemical methods.
7. Take air samples by sedimentation and aspiration methods for contamination by microbes, dust, chemicals for laboratory analysis (using an electroaspirator, Krotov device, aerosol filters, allongs with absorbent reagents).
8. Calculate the required and actual volume and frequency of ventilation of the premises on the basis of maximum permissible and actual concentrations of carbon dioxide or other pollutants.
9. According to meteorological-synoptic, heliogeophysical and other weather-forming factors, determine the medical type of weather.
10. Determine the climatic conditions of the region.
11. Take water samples when choosing sources of water supply and drinking water.
12. Calculate the amount of chlorinated lime or two-tertiary salt of calcium hypochlorite to disinfect water by chlorine consumption and the method of superchlorination.
13. Determine the amount of active chlorine in chlorinated lime, two-tertiary salt of calcium hypochlorite, tablets "pantocid", "aquasept" express field method.
14. Have methods of purification, disinfection, decontamination of water while providing a decentralized water supply system.
15. Take soil samples to determine physicochemical parameters, chemical, bacteriological, helminthological analysis.
16. Carrying out of instrumental and laboratory researches of physical factors, air of a working zone.
1 7 . Carrying out ergometric timing and registration of a photo of a working day at production.

18 . Noise and vibration measurement using a noise vibration complex, noise meter and noise spectrum analyzer.
19 . Determine the content of toxic substances in the air using a universal gas analyzer UG-2.

The list of theoretical questions for preparation of students for the final module control of module 2 "Special problems of hygiene and ecology" for 3 course:

1. Environmental factors and social living conditions that affect the formation of the health of children and adolescents.
2. General patterns of growth and development of children and adolescents. Assessment criteria and health indicators for children and adolescents. Methods of comprehensive assessment of the health of children and adolescents. Features of the distribution of children and adolescents by health groups.
3. The main indicators of physical development. Rules of anthropometry. Requirements for tables of regional standards of physical development. The concept of biological and calendar age. Indicators of the level of biological development of children and adolescents. Modern ideas about epochal and intra-age acceleration and deceleration (retardation).
4. Methods for assessing the physical development of children and adolescents (the method of sigma deviations, regression scales, complex and centile methods). Methods of assessing the state of health and physical development of organized children's groups.
5. Tasks of the doctor on the organization and carrying out of improving actions in children's collectives (schools, gymnasiums, lyceums, colleges, boarding schools, vocational schools, orphanages, preschool establishments, camps of work and rest, out-of-school establishments).
6. Child and adolescent health management system. The role of the family doctor in the formation of favorable hygienic conditions for the upbringing and education of the child.
7. Factors and conditions of the environment and the educational process affecting health ' I'm children and adolescents. The shift in the state of health ' I and diseases that are caused by the influence of environmental factors and conditions of stay of pupils in schools.
8. Hygienic requirements for the land plot, building and group section of the children's preschool institution. The principle of group isolation and its significance.
9. Hygienic requirements for the land plot and the building of the general educational institution. The principle of functional zoning and its significance. Hygienic requirements for planning, arrangement, equipment, microclimate, ventilation, lighting and sanitation of the main premises of educational institutions.
10. Hygienic requirements for educational furniture and their physiological justification. Rules for marking desks, other school furniture and seating students. Hygienic requirements for the placement of school furniture in the school classroom.
11. The main preventive measures to improve the sanitary and hygienic conditions of students in modern educational institutions.
12. Anatomical-physiological and psychophysiological features of the body of children and adolescents of different ages and genders. Medical, physiological and psychological-pedagogical criteria for assessing the level of development of the child. Methods of studying age psychophysiological features of an organism of children and teenagers. Health changes and diseases caused by irrational organization of the educational process.
13. The concept of school maturity. Hygienic bases and methods of determining the functional readiness of the child to study at school.
14. The concept of daily routine and basic regime elements. Features of hygienic rationing of daily activities of students. Hygienic principles of compiling and evaluating the daily routine of children and adolescents of different ages.
15. Hygienic requirements for the organization of the educational process in modern secondary schools. Hygienic requirements for school schedules and methods of its evaluation. Hygienic requirements for the organization and methods of the lesson. Features of education of six-year-old children.
16. Hygienic requirements for school textbooks and manuals.
17. Features of the educational process in innovative educational institutions (gymnasiums, lyceums, colleges, etc.), specialized schools, children's sanatoriums and health facilities.
18. Hygienic requirements for the organization of extracurricular activities and free time of students.
19. Hygienic principles of rational organization of physical education of children and adolescents. Types, means and forms of physical culture in modern educational institutions.

20. The concept of motor activity. Methods of quantitative measurement and hygienic assessment of motor activity. Prevention of hypokinesia. Physiological and hygienic bases of assessment of a lesson of physical culture. Hygienic requirements for places of physical education classes.
21. Medical control over the organization of physical education classes and hygienic aspects of medical support of physical education of children and adolescents. Physiological and hygienic bases of hardening of an organism of children and teenagers. Basic types, principles and methods of hardening organization.
22. Hygienic principles of rational organization of labor and polytechnic education of children and adolescents. Physiological and hygienic bases of control over labor training of schoolchildren. Hygienic requirements for the content, mode and conditions of organization and conduct of labor training in different types of modern educational institutions.
23. Vocational guidance as a hygienic problem. Professiography. Modern system of professional orientation, its functions and leading components. Scientific bases of medical and professional consultation. The concept of professional selection. Methods for predicting professional success.
24. Hygienic principles of rational, preventive, curative, dietary and curative-preventive nutrition, Indicators of adequacy and balance of nutrition.
25. Classification and hygienic characteristics of basic nutrients. Physiological norms of the need for basic nutrients and energy of different groups of the population. Methods of assessing the nutrition of the population.
26. Basic principles of sanitary examination of food products. Classification of food products and methods for assessing the degree of their quality. The concept of counterfeit and refined products, as well as surrogate products.
27. Physiological and hygienic significance of proteins in human nutrition . Diseases caused by protein deficiency and excess and their prevention. The concept of protein-energy deficiency .
28. Physiological and hygienic value of carbohydrates in human nutrition . Diseases caused by deficiency and excess of carbohydrates and their prevention.
29. Physiological and hygienic value of fats in human nutrition . Diseases caused by deficiency and excess of fats and their prevention. Signs of fat spoilage. Refined and superheated fats and their hygienic value.
30. Physiological and hygienic value of vitamins in human nutrition . Diseases caused by deficiency and excess of vitamins and their prevention. Hygienic value of flavoring substances in food.
31. Hygienic value of macro- and microelements in human nutrition . Diseases caused by deficiency and excess of trace elements. The concept of biogeochemical provinces. On the prevention of biogeochemical endemics.
32. Nutritional and biological value of milk and dairy products. Fermented milk products and their medicinal value. Sani containers examination of milk and dairy products. Quality indicators and signs of falsification and spoilage of milk.
33. Nutritional and biological value of grain processing products. Indicators of quality and spoilage of flour.
34. Nutritional and biological value of vegetables and fruits. Classification of carbohydrates. Easily and difficult to digest carbohydrates and their hygienic value.
35. Nutritional and biological value of meat and meat products. Sanitary examination of meat and meat products. Signs of spoilage of meat. Prevention of diseases associated with the consumption of substandard meat products.
36. Nutritional and biological value of fish and fish products. Sanitary examination of fish, fish products and canned food. Signs of fish spoilage. Diseases associated with the consumption of fish products.
37. Hygienic characteristics of methods and means of food preservation . Sanitary examination of canned food and food concentrates.
38. Food poisoning and their prevention (classification of food poisoning, etiological factors, tactics and responsibilities of the doctor who first diagnosed food poisoning). General scheme of investigation of a case of food poisoning.
39. Food poisoning of bacterial nature (etiology, conditions that contribute to food poisoning, differential diagnosis). Prevention measures.
40. Food poisoning of chemical nature and their prevention (classification, etiological factors, differential diagnosis). Prevention measures.
41. Hygienic basics of medical and dietary nutrition. Classification of food products taking into account their therapeutic effect. Tasks and responsibilities of a nutritionist.
42. Hygienic bases of medical and preventive nutrition at work. Rules of food sampling for laboratory research.
43. Hygienic principles of hospital construction and creation of optimal conditions for patients' stay and work of medical staff. Sanitary examination of projects for the construction of treatment and prevention facilities.

44. Hygienic principles of hospital construction. Hygienic requirements for land and hospital buildings.
45. Hygienic aspects of the organization of work of doctors. Prevention of occupational diseases of doctors of various specialties .
46. Hygienic requirements for the ward section and the hospital ward. Methods of studying microclimatic conditions and ventilation efficiency in the ward. Indicators of air quality in the ward.
47. Hygienic requirements for the arrangement, equipment and operation of the hospital reception department. Features of the organization of admission of patients to infectious departments of hospitals. Sanitary but anti-epidemic regime.
48. Hygienic requirements for the arrangement, equipment and operation of the therapeutic department. Sanitary and anti-epidemic regime.
49. Hygienic requirements for the arrangement, equipment and operation of the surgical department of the hospital. Sanitary and anti-epidemic regime.
50. Hygienic requirements for the arrangement, equipment and operation of the obstetrics and gynecology department and maternity hospital . Sanitary and anti-epidemic regime.
51. Hygienic requirements for the arrangement, equipment and operation of the children's ward of the hospital. Sanitary and anti-epidemic regime.
52. Hygienic requirements for the arrangement, equipment and operation of the infectious diseases department of the hospital. Prevention of nosocomial infections. Sanitary and anti-epidemic regime.
53. Hygienic requirements for the arrangement, equipment and operation of the radiology department of the hospital. Sanitary and dosimetric control. Methods for determining the required anti- radiation protection.
54. Hygienic requirements for the arrangement, equipment and operation of the radiology department of the hospital. Sanitary and dosimetric control. Hygienic assessment of the effectiveness of radiation protection.
55. Disposal and disinfection of hospital wastewater and public health (basic principles of disposal and disinfection of wastewater in the presence and absence of centralized sewerage systems, local treatment facilities of rural hospitals and separately located health facilities).
56. Hygienic characteristics of ionizing radiation (physical properties, biological action, types of doses, devices and units of measurement, pathology). Hygienic principles of radiation control. Radiation safety standards.
57. Hygienic characteristics of factors that determine the nature and severity of radiation injuries. Quantitative and qualitative characteristics of radionuclides and ionizing radiation. Gigi yenichni principles of radiation control.
58. Hygienic bases of radiation protection in medicine, industrial and domestic conditions. Methods for estimating the radiation background of the area. Basic sanitary rules for working with radioactive substances.
59. Methods of studying the impact of environmental factors on public health: the choice of observation zones, assessment of the degree of environmental pollution, determination of the integrated health index.
60. Hygienic foundations of a healthy lifestyle. Risk factors and their prevention. The concept of combined, complex and combined effect of environmental factors on human health.
61. Hygienic aspects of medical biorhythmology. Fundamentals of psycho hygiene and psychoprophylaxis.
62. Hygienic principles of hardening. Hygienic characteristics of baths and their role in maintaining health and disease prevention .
63. Hygienic requirements for clothing, footwear and household items. Hygienic assessment of hospital clothes.

The list of practical skills required for the final module control of the module 2: *"Special problems of hygiene and ecology "* for 3rd year students:

1. Calculate daily energy expenditure and nutrient needs of the body.
2. Calculate the caloric content and balance of nutrients in the diet - the menu layout and the results of laboratory analysis of products and ready meals.
3. Determination of capillary resistance with a Matussis or Nestorov manometer.
4. Conducting a language test with Tillmanns reagent.
5. Evaluate the quality of food by organoleptic methods, take their samples for laboratory analysis.
6. To determine the indicators of natural lighting of premises (light coefficient, coefficient of natural lighting, etc.) by calculation methods (Watt method, determination of DF according to Danyliuk's schedules and insolation time with the help of control-insolation line).
7. "Reading" architectural and planning drawings of hospital buildings.
8. Sanitary inspection of a hospital, educational, industrial institution.
9. Measurement of indicators of microclimate, light, concentration of carbon dioxide in the ward, section,

department, treatment and prevention, health institution as a whole.
10. Carry out research of factors of the denatured biosphere (physical, chemical, biological pollution).
11. Carry out tempering tests.
12. Measure the power of ionizing radiation doses at workplaces, on protective screens, individual radiation doses of category A personnel, calculate radionuclide contamination of work surfaces and their concentration in air, water, food.
13. Carry out preventive measures when working in hot and tropical climates, when organizing water supply and nutrition in arid and humid tropical climate.
14. To register indicators of a physiological condition of an organism (heart rate, size of arterial pressure, concentration of attention, latent periods of sensorimotor reactions, force of a brush, position force, volume of working memory).
15. Measurement of thickness, thermal conductivity, hygroscopicity of fabrics for household, industrial, hospital clothes.
16. Carrying out somatoscopic, somatometric, physiometric, neuropsychological researches of physiological development of children and teenagers
17. Carrying out measurements of educational premises, school furniture.

The list of theoretical questions for preparing students for the final module control of the 3rd module "Hygiene and human ecology":

1. Hygiene as a science, its place in the work of medical doctors. Purpose, tasks and methods of research. Principles of hygienic rationing.
2. The main directions of scientific research in modern hygiene. Hygiene laws. Basics of Ukrainian legislation on health care and sanitary-epidemiological well-being of the population.
3. Methodological and methodical bases of the study of environmental factors and their influence on the state of health of the population.
4. Principle diagram of hygienic control of working conditions, living conditions and environmental factors. The general scheme of studying and evaluating the interrelationships of environmental factors and population health.
5. Methodology of qualitative (conceptual) analysis of the state of the environment and "normalized" forecasting of changes in the level of public health based on the state of atmospheric air, water, and soil pollution.
6. Methods of quantitative analysis of the state of the environment. Zones of observation, definition of the concept. Methodology for selecting surveillance zones. The concept of the principle schemes of the study of the influence of environmental factors on the health of the population.
7. Population health as an integral indicator of the state of the environment.
8. The concept of the epidemiological method of studying the health status of the population and the main methods of its implementation. The methodology of qualitative (conceptual) and quantitative analyzes of the level of health of the population and its use in the practical activity of a doctor.
9. Risk assessment methodology. The main stages of risk assessment methodology. Risk management and hygienic rationing. Problems of applying risk assessment methodology in Ukraine.
10. Biosphere and its structure. Circulation of substances in the biosphere. Structure, composition and properties, hygienic value of the atmosphere, lithosphere, hydrosphere. The environment, its components.
11. Weather, definition of the concept. Factors forming and characterizing the weather. Heliometeotropic human reactions, definition of the concept, mechanism of their occurrence. Medical classifications of weather, the values of the indicators underlying them.
12. The influence of meteorological conditions on the dynamics of atmospheric air pollution. The influence of weather on human health due to the distortion of the dynamics of atmospheric pollution. Medical weather forecasting, principles and methods of prevention of heliometeotropic reactions.
13. Climate. Definition of the concept. Factors forming and characterizing the local climate. Classification and hygienic characteristics of climatic zones. Peculiarities of the climate in different natural and geographical regions.
14. Acclimatization. The main hygienic issues of acclimatization in the North, South and in the conditions of the arid zone and highlands. Use of climatic factors for health and preventive purposes, sanatorium-resort treatment for various diseases.
15. The nature of solar radiation, the main components of the corpuscular and electromagnetic part of solar

radiation. Spectral composition of the ultraviolet part of solar radiation at the boundary with the atmosphere and on the Earth's surface (areas A, B, C). The ozone layer of the atmosphere and its hygienic significance.
16. Types of UVB biological action and its features for each area of UVB spectral composition. Concept of erythematous, physiological, prophylactic UVD dose. The main types and mechanisms of biological action of UVR. Health disorders and diseases associated with UVR deficiency.
17. The main symptoms of "sun starvation" and indications for prophylactic ultraviolet irradiation. Use of UFR for primary and secondary prevention of various diseases. Types of artificial UVR sources, characteristics of the principle of their action, basic technical data. Photos.
18. Biological rhythms and human health. The concept of biological rhythms. Prerequisites and reasons for the emergence of medical biorhythmology as a science. Leading characteristics of biological rhythms. The concept of desynchronosis as the main type of chronopathology and as a medical and hygienic category. Types of desynchronosis.
19. The influence of the quantity and quality of drinking water and water supply conditions on the health of the population and sanitary living conditions.
20. Infectious diseases, the pathogens of which are transmitted through water. Features of water epidemics, their prevention. Diseases of non-infectious origin caused by the use of poor-quality water and means of their prevention.
21. The problem of macro- and microelementosis of water origin. The hygienic value of water hardness. Endemic fluorosis and its prevention. Endemic caries. Fluoroprophylaxis of dental caries and its importance in the practice of centralized water supply. Water-nitrate methemoglobinemia as a hygienic problem, its prevention.
22. General hygienic requirements for the quality of drinking water, their indicators - physical, organoleptic, indicators of natural chemical composition, their hygienic characteristics. State standard for drinking water.
23. Sources and indicators of water pollution and epidemiological safety - organoleptic, chemical, bacteriological, their hygienic characteristics.
24. Comparative characteristics of centralized and decentralized water supply systems. Elements of water supply when taking water from artesian and open water bodies. Zones of sanitary protection.
25. Generally accepted methods of water purification in a centralized water supply system (coagulation, settling, filtration), their essence and facilities used for this purpose.
26. Water disinfection methods, their classification, hygienic characteristics. Chlorination of water, its methods and reagents used for this purpose, disadvantages of chlorination.
27. Methods of sanitary supervision of centralized water supply systems (precautionary and ongoing). Types of laboratory water analysis - bacteriological, sanitary-chemical (short and complete).
28. Sanitary supervision of local water supply systems. Arrangement and operation of wells, catchments. "Rehabilitation" of wells.
29. Soil, definition of the concept. Hygienic, epidemic and endemic significance of soil. Basic physical properties of soil and their hygienic significance. The main abiotic components of the soil, their natural chemical composition and hygienic characteristics.
30. Soil biocenoses, their classification and hygienic characteristics. Soil as a factor in the transmission of pathogens of infectious diseases. Sources of soil pollution, their classification and hygienic characteristics. Factors and mechanisms involved in soil self-cleaning.
31. Use of soil for disposal of waste from household and human production activities. Hygienic characteristics of methods of collection (planned apartment-by-apartment, planned-yard), removal and disposal of solid waste of communal, domestic, industrial, and construction origin.
32. Rules, methods and means of selection and preparation of soil samples for laboratory research. The method of hygienic assessment of the sanitary state of the soil based on the results of the sanitary survey of the site and laboratory analysis of samples.
33. Main sources, criteria and indicators of chemical pollution of atmospheric air, air of residential and public premises. Impact of air pollution by chemical substances on human health.
34. Indicators and requirements for air sampling for sanitary-chemical and bacteriological research. Aspiration method of air sampling, devices for air aspiration.
35. Living conditions in settlements and human health. Peculiarities of the formation of the urban environment and hygienic aspects of life in a modern city. Urbanization as a socio-hygienic problem.
36. Planning and development of the territory of the settlement. Principles of functional zoning of the territory of settlements, placement of residential, industrial, construction-storage and recreational zones in them.

Hygienic value of green spaces.
37. Characteristics of sources of atmospheric pollution in the settlement. Patterns of distribution of pollutants in the atmosphere, factors on which the level of air pollution depends. Impact of polluted air on the health and living conditions of the population.
38. Direct effect on the body: acute poisoning, chronic, specific and non-specific diseases. Ways and means of preventing the negative impact of polluted atmospheric air on health.
39. Noise, vibration, electromagnetic radiation in the conditions of populated cities, their sources and adverse effects on the health of the population.
40. Hygienic requirements for placing a hospital in a settlement, taking into account existing facilities and "wind directions". Situational plan. Hygienic requirements for the general plan of the development of the hospital site, functional zoning of the territory, landscaping, building density and landscaping.
41. Modern hospital building systems (centralized, block, decentralized-pavilion, mixed), their comparative characteristics, impact on operating conditions, equipment. Hygienic requirements for sanitary and technical equipment of hospitals.
42. Hygienic requirements for the planning of reception departments of the hospital, its importance for the mode of operation and prevention of intra-hospital infections. Hygienic requirements for the planning and mode of operation of therapeutic, surgical, infectious and other departments.
43. Hygienic characteristics of ward sections, requirements for the selection of premises of these sections in departments of various profiles. Hygienic requirements for the planning and equipment of wards of departments of various profiles. Peculiarities of planning and equipping departments of infectious profile, resuscitation and rehabilitation.
44. Hygienic requirements for the planning, equipment and mode of operation of operating units.
45. Nosocomial infections, modern approaches to defining the concept. Theories and concepts of nosocomial infections. Ways of transmission, factors of transmission of nosocomial infections. The role of opportunistic microflora in the occurrence of nosocomial infections.
46. Sanitary and hygienic and epidemiological supervision of the spread of intra-hospital infections. Basic principles of prevention of nosocomial infections. Sanitary and hygienic measures for the prevention of nosocomial infections in specialized hospitals and departments.
47. Sanitary and hygienic regime of inpatients. Sanitary and hygienic measures for the prevention of nosocomial infections among the personnel of health care institutions. Rights and responsibilities of personnel regarding the prevention of nosocomial infections.
48. Organization of nutrition for patients in hospital hospitals and hygienic supervision of its completeness and safety. Sanitary and hygienic requirements for the collection, removal and disposal of liquid, solid and specific waste generated in the hospital.
49. Alimentary diseases (primary diseases). Secondary diseases of insufficient and excessive nutrition. Functions of food and factors that provide them. Theories and concepts of nutrition. Types of biological action of food. Use of the protective and pharmacological biological action of food for the purpose of organizing therapeutic and preventive, ecologically protective, therapeutic and dietary nutrition.
50. Basic requirements for building a human diet. Energy value and nutrient composition of food rations. Recommended values of the physiological need for energy. Sources of energy in food.
51. Proteins, fats, carbohydrates, vitamins, mineral elements and their importance in nutrition.
52. Basic principles and forms of therapeutic and preventive nutrition. Appointment of therapeutic and preventive nutrition. Peculiarities of the organization of LPH at various industrial enterprises. Rations of medical and preventive nutrition.
53. Principles of medical nutrition. Characteristics of medical diets. Peculiarities of medical (dietary) nutrition in sanatoriums and prophylactics.
54. Risk factors for the spread of nosocomial infections and the occurrence of food poisoning in health care facilities.
55. Food poisoning, their definition and classification. Food toxic infections: definition, etiology, diagnosis, clinic, principles of prevention. Bacterial toxicoses, their etiology, diagnosis, clinic, prevention. Mycotoxicoses, their etiology, diagnosis, clinic, prevention. Food poisoning of a non-microbial nature. Food poisoning of unknown etiology, hypotheses of their occurrence, features of the clinic. Preventive measures to eliminate and prevent food poisoning.
56. Methods of investigating the causes of food poisoning. Documents issued during and at the end of a food poisoning investigation. Instructional and methodological and legislative documents used in the investigation of

food poisoning and their prevention.
57. Sanitary legislation in the field of labor protection. Preventive and periodic inspections of workers, organization of their conduct, preparation of accounting and reporting documentation. Basic principles and criteria of hygienic regulation of industrial poisons in the air of the working area as the basis of poisoning prevention.
58. Methods and means of prevention of occupational pathology and labor protection in production. Safety techniques, industrial sanitation, sanitary education of workers as means of prevention of occupational diseases and poisoning.
59. Types of work, their physiological and hygienic characteristics. Physical work, its difficulty and intensity. Mental work, its intensity. Peculiarities of operator work. Physiological changes in the worker's organism in the process of physical and mental and operator work. Fatigue and overfatigue, explanations and scientific justifications for their development.
60. Modern principles and criteria of hygienic assessment of work and its classification according to the degree of difficulty and tension. Methods of studying the functional state of the body during mental and physical work. System of preventive measures regarding the rational organization of the labor process. Psychophysiological professional selection, diagnosis and psycho-fatigue.
61. Hygienic importance of planning, equipment, optimal operating mode of health care facilities as conditions for creating safe working conditions for medical personnel.
62. Occupational hazards, hygiene and labor protection of medical personnel of various departments of the hospital. Legislative and organizational measures regarding the health workers' labor protection. Occupational hazards, hygiene and labor protection of medical staff of diagnostic, physiotherapeutic, balneological, resuscitation and other specific departments and laboratories of a hospital.
63. Personal hygiene of medical personnel in the health care system and provision of favorable working conditions and prevention of intra-hospital infection and occupational diseases.
64. Environmental factors and social conditions of life affecting the processes of health formation of children and adolescents. General patterns of growth and development of the child and adolescent organism. Evaluation criteria and health indicators of children and adolescents.
65. Methodology of comprehensive assessment of the state of health of children and adolescents. Peculiarities of the distribution of children and adolescents by health groups. Physical development as an important criterion for assessing the state of health. Basic indicators of physical development. Rules of anthropometry. Requirements for tables of regional standards of physical development.
67. Tasks of the doctor regarding the organization and implementation of health-improving activities in children's groups. The system of managing the health of children and adolescents.
68. Factors and conditions of the environment and educational process affecting the health of children and adolescents. Changes in the state of health and diseases caused by environmental factors and the educational process.
69. Hygienic requirements for land plots and buildings of educational institutions and institutions. The principle of functional zoning and its meaning.
70. Hygienic requirements for planning, arrangement, equipment, microclimate, ventilation and lighting, as well as sanitary and technical improvement of the premises of educational institutions.
71. Methodology for assessing the conditions of students' stay and education in modern educational institutions. Hygienic requirements for children's furniture and their physiological justification.
72. Basic preventive measures to improve the conditions of the educational process and the sanitary and hygienic conditions of students' stay in modern educational institutions.
73. Hygienic principles of rational organization of physical education of children and adolescents. Types, means and forms of physical education in modern educational institutions. Prevention of hypokinesia.
74. Physiological-hygienic basis of assessment of the lesson of physical culture. Hygienic requirements for places of physical education classes. Medical control over the organization of physical culture classes and hygienic aspects of medical support for physical education of children and adolescents.
75. Physiological and hygienic basics of hardening the body of children and adolescents. The main types, principles and methods of hardening organization.
76. Hygienic principles of rational organization of labor and polytechnic education of children and adolescents. Physiological-hygienic bases of control over labor training of schoolchildren. Hygienic requirements for the content, regime and conditions of organization and conduct of labor training in the conditions of various types of modern educational institutions.

77. Professional orientation as a hygienic problem. Psychophysiological aspects of professional self-determination. Professionalism. Scientific basis of medical and professional consultation. Concept of professional selection. Methods of predicting professional success.
78. Radiation hygiene as a branch of hygienic science and sanitary practice, its purpose and tasks. Ionizing radiations used in production, science, medicine, their sources.
79. Qualitative and quantitative characteristics of radionuclides as sources of ionizing radiation, their measurement units. Qualitative and quantitative characteristics of ionizing radiation. Types of doses, units of their measurement. Power doses.
80. The main types of radiation damage to the body and the conditions for their occurrence. Acute and chronic radiation sickness, conditions of occurrence, stages of the course, main symptoms. Remote consequences of radiation damage, local damage.
81. Radiation safety standards (NRBU-97) and Basic sanitary rules (OS-PU-01) for working with radioactive substances and other sources of ionizing radiation, principles of hygienic regulation.
82. Methods and means of radiation and medical control when working with sources of ionizing radiation. Radiometric research methods used in radiation hygiene.
83. Methods of determining the radioactivity of air, water, and food products. Sample selection methods. Research methods of radioactive contamination of work surfaces, equipment, hands and body of workers. Methods of dosimetric control. Devices and installations for measuring ionizing radiation. Individual dosimetric control.
84. Ionizing radiation as an industrial hazard for the personnel of medical institutions. Ionizing radiation as a risk factor for patients in medical institutions during X-ray diagnostic and treatment procedures.
85. Structure of the radiology department of the hospital. Features of radiation danger and anti-radiation protection in each structural subdivision.
86. Characteristics of the radiation hazard in the X-ray diagnostic office and the conditions on which it depends. Requirements for X-ray room planning. Radiation safety regulations and benefits for the staff of medical institutions and patients.
87. Ways to reduce radiation exposure of staff and patients of medical institutions. Sanitary and technical equipment of X-ray and radiological departments. Methods of collection and disposal of radioactive waste when working with open sources of ionizing radiation.
88. Principles and means of radiation protection. Types of radiation protection.
89. Principles and criteria for the division of territories exposed to radioactive contamination as a result of the Chernobyl disaster.

The list of practical skills for the final module control of the 3rd module "Hygiene and human ecology":
1. Determination of the preventive dose of UV radiation by biological, physical, chemical and calculation methods.
2. Study of the microclimate of the premises.
3. Hygienic assessment of the microclimate of premises (residential, industrial, school classroom, ward, operating room).
4. Determining the cleanliness and efficiency of air ventilation in closed rooms by the content of carbon dioxide (CO_2) in it.
5. Calculation of the actual and required volume of ventilation by the anthracometric method.
6. Determination of bacterial air pollution by aspiration and sedimentation methods.
7. Determine and evaluate the level of natural and artificial lighting in the room.
8. Determine and evaluate the level of artificial lighting using the "Watt" method for different sources (incandescent lamps, fluorescent lamps).
9. Read the analysis of water taken from a mine well, a water tap and an open reservoir. Make a conclusion about water quality.
10. To develop measures for the prevention of infectious and non-infectious diseases, the transmission factor of which can be water.
11. Calculate the daily rate of water consumption for the settlement.
12. Propose basic water supply schemes for a settlement or separately located communal facilities (for example, a hospital).
13. To propose a basic scheme of sewerage of a communal object.
14. Read the soil analysis and make a conclusion about the sanitary condition of the soil.

15. Develop measures to prevent infectious and non-infectious diseases caused by soil pollution.
16. Collect air sampling schemes for dust and nitrogen dioxide content.
17. Assess the degree of danger and the level of atmospheric air pollution.
18. Methodology for assessing the patient's nutritional status.
19. Methodology for correcting the patient's nutritional status.
20. Determination of principles of alimentary correction of nutritional status and state of health, taking into account pathogenetic mechanisms of the disease.
21. The method of preparing an adequate diet, which corresponds to the peculiarities of the patient's individual nutritional status and state of health.
22. The method of carrying out a rational correction of the diet in accordance with the change in the patient's state of health.
23. To develop dietary recommendations for a specific patient during the period of remission, aimed at preventing the exacerbation of the disease.
24. Methodology for measuring industrial noise and vibration.
25. Methodology for measuring industrial microclimate parameters.
26. The method of measuring EMF of radio frequencies in production conditions.
27. Techniques for measuring the level of illumination at workplaces.
28. The main stages of the study of the air environment in production conditions for the content of harmful chemicals and dust.
29. Basic methods of air sampling in production.
30. Methodology for calculating the required volume of air when taking air samples to determine harmful substances in it.
31. Basic methods of analyzing air samples for the content of harmful substances in it.
32.. Methods of investigating cases of acute and chronic occupational poisoning and diseases.
33. Methods of organizing and conducting periodical medical examinations.
34. Methodology of comprehensive assessment of the child's physical development.
35. Determine the child's health group.
36. Determine the biological level of development according to indicators that are informative according to the age of the child.
37. Research and evaluate somatoscopic, somatometric, physiometric indicators of physical development.
38. Conduct research and evaluate the functional state of the child's central nervous system based on the results of a proofreading test, tremormetry, the volume of short-term memory, and the Schulte-Platonov method.
39. Compile a daily routine for children of different ages, evaluate the actual daily routine of a child, teenager.
40. To assess the child's functional readiness to study at school according to medical and psychophysiological criteria.
41. Give a hygienic assessment of the organization of the educational process in the preschool educational institution and in the school.
42. Give a hygienic assessment of providing children with educational furniture in the school classroom and work workshops.
43. Give a hygienic assessment of the organization of physical education and labor training at school.
44. Give a hygienic assessment of the places where physical education classes are held in preschool educational institutions and schools.
45. Give a hygienic assessment of the educational routine and lesson schedule at school.
46. Assess the quality and organization of children's nutrition in educational institutions.
47. Carry out medical professional selection and provide medical professional consultation to the teenager
48. Draw up a program for conducting an in-depth medical examination of children of different ages.
49. Conduct a sanitary examination of projects for the construction of educational institutions for children and adolescents, samples of printed products for children, toys. Fill out the relevant medical documentation.
50. Give an opinion on the possibility of allocating a plot of land for the construction of institutions for children and adolescents.
51. The use of calculation methods to assess the radiation situation and individual exposure doses when working with radionuclides and other sources of ionizing radiation.
52. Calculation of protection parameters against external radiation when working with gamma radiation sources.
53. Compilation of programs for dosimetric control of X-ray and radiological departments of medical

institutions.
54. Evaluation of the state of radiation safety in X-ray and radiological departments of medical institutions based on the results of sanitary examination and dosimetric control.
55. Measurement of the power of the dose absorbed in the air in the premises and workplaces of the personnel of the X-ray and radiological units of medical institutions.
56. Detection of radioactive contamination of work surfaces and staff's overalls in the radiology department of the hospital.
57. Analysis and assessment of radiation characteristics of building materials.
58. Analysis and evaluation of the radiation parameters of a residential building for compliance with radiation safety requirements at the stage of putting it into operation.
59. Assessment of radioactive contamination of food products and drinking water in the territories that were exposed to radioactive contamination as a result of the Chernobyl disaster.

Teaching methods
- methods of organization and implementation of educational and cognitive activities (informational-receptive, explanatory-illustrative; reproductive): explanation; demonstration (visualization); performance of exercises and tasks;
- methods of stimulation and motivation of educational and cognitive activity (problematic learning; partially exploratory, exploratory): work in research groups; conference, business game; practice-oriented case method; heuristic conversation, discussion, visualization; interactive methods: work in pairs, case technologies, "brainstorming";
- methods of control and self-control for the effectiveness of educational and cognitive activities;
- self-education;
- video method in combination with the latest information technologies and computer learning tools (distance, multimedia).

Forms and methods of assessment
- entrance control (determining the readiness of higher education applicants to master the discipline);
- current control (assessment of the quality of mastering the material of individual topics);
- final control (assessment of mastery of the educational material of the academic discipline by the student of higher education).
These types of control are carried out in the form of an oral survey, test tasks, performance of situational tasks, written control, written or software computer testing, practical control, as well as self-control and self-evaluation.

System of current and final control
Control measures for evaluating students' educational activities provide for current and final control of students' knowledge, abilities and skills.
Control measures are based on the principles of: compliance with higher education standards; use of a standardized and unified diagnostic system aimed at applying knowledge; determination of evaluation criteria; objectivity and transparency of control technology, compliance with the rules of academic integrity.
Control of the current educational activity of students is carried out in practical classes in accordance with the current topic and self-directed work. Mastering of each topic is monitored in classes through oral and/or written surveys, testing, solving situational problems, and performing practical work (initial control – as level of readiness for classes and final – level of knowledge and skills).
The teacher evaluates the success of each student in each lesson on a four-point (traditional) scale using the evaluation criteria for the discipline, developed taking into account the generalized criteria for evaluating students' knowledge.
Performance evaluation is integrated (all types of student work are evaluated both during preparation for the class and during the class).

Criteria for assessing students' knowledge:

- "**Excellent**" - the student has at least 90% knowledge of the topic both during the survey and test control. Well versed in subject terminology. Clearly formulates answers to questions. Practical work and/or solving situational problems are performed in full.
- "**Good**" - the student has knowledge of at least 75 - 89%, makes minor mistakes, which he corrects by

answering questions. Answers are 75% of the questions during the test tasks. Practical work and/or solving situational problems are performed in full, minor mistakes are made.
- "**Satisfactory**" - the student has knowledge on the topic of at least 60 - 74%, during testing answers at least 60% of questions. The answers are not accurate enough; leading questions do not correct them. Practical work and/or situational tasks have not been completed in full.
- "**Unsatisfactory**" - the student has not mastered the required minimum knowledge on the subject of classes and testing within 59%. Unable to answer leading questions, operates with inaccurate formulations. Test control tasks are performed by less than 59%. Has no practical skills, does not solve situational problems.

Conversion of the current grade, set on the traditional 4-point scale, to multi-point in each lesson is not carried out.
The presence of a grade of "2" for current performance does not deprive the student of the right to admission to the semester final certification with a minimum number of points for current performance, which is 72 points.
A student is not entitled to retake current grades of "2" if he has the minimum amount of points for admission to control measures. Current scores of "3" or "4" do not rework.
The number of rework of the current "2" is limited by two attempts.

The conversion of the traditional 4-point scale to a multi-point scale (maximum 120 points) is carried out only after the last practical lesson. The conversion is carried out according to the following algorithm:
a) the student's average grade is calculated on a traditional 4-point scale, obtained during current classes from this module (accurate to hundredths of points);
b) a multi-point summary assessment of the current performance for the module is obtained by recalculating the average score in accordance with the Regulations on the Organization and Methodology of Evaluating Educational Activities of Graduates of Higher Education of the Poltava State Medical University (https://www.pdmu.edu.ua/storage/department-npr/docs_links/NMQ6RVrpAGYuKpw1JoSJaApnMMMwbKdxQN9FC2hu.pdf)

Applicants for higher education who do not have unfulfilled missed classes, scored a minimum score of at least 72 (which corresponds to an average score of 3.0 for current performance) are allowed to the final module control.
Passing the final module control is open and public.
The questions and situational tasks that are presented at the module control are formulated in such a way that the reference answer of a higher education applicant to each one takes approximately 3-5 minutes. The questions cover the most significant sections of the working curriculum, which are sufficiently covered in the literary sources recommended as basic for studying the discipline. Examination cards of module control were formed for the questions, which were approved at the department meeting. Each card consists of 2 theoretical questions and a situational task. At module control, questions are also presented on topics that are determined for independent study within the module.
25 points are awarded for each correct and complete answer to a theoretical question, 30 points are awarded for the answer to a situational problem (80 points in total).As a result of passing the FMC, the student is given a total grade from 0 to 80 balls, and the conversion of points into the traditional grade is not carried out. If the student violates the rules of academic integrity (p.2.2.5. Rules of Procedure) during the exam, the results are canceled; the student is given a grade of "unsatisfactory" (0 ball).
In case of disagreement of the higher education applicant with the grade obtained for FMC, the higher education applicant has the right to file an appeal in accordance with the Regulations on the appeal of the results of final control of knowledge of higher education applicants (https://www.pdmu.edu.ua/storage/department-npr/docs_links/8Egpml8X2hOVGl4OURn5Agzgjwbb6RhYwFXPhHuB.pdf)
Students, who during the study of the discipline had an average score of 4.50 to 5.0, are exempt from the exam and automatically (with consent) receive a final grade in accordance with with the Regulations on the Organization and Methodology of Evaluating Educational Activities of Graduates of Higher Education of the Poltava State Medical University (https://www.pdmu.edu.ua/storage/department-npr/docs_links/NMQ6RVrpAGYuKpw1JoSJaApnMMMwbKdxQN9FC2hu.pdf) with the presence of the applicant in FMC. In case of disagreement with the assessment, the specified category of applicants for higher education takes the exam according to the general rules.
The student has the right to retake FMC no more than 2 times.

The grade in the discipline is set on a traditional (national) 4-point scale based on the average number of points after graduation (3 modules) in the 6th year.

Conversion of the average number of points for all modulees provided by the program in the discipline, in the traditional assessment on a 4-point scale

The average number of points per discipline	Traditional score on a 4-point scale
122 – 139,99	3
140 – 179,99	4
180 – 200	5

The grade from the discipline is not derived (not converted) from the grade of ECTS.

Methodological support

1. Working program of the discipline.
2. The syllabus of the discipline.
3. List of recommended reading.
4. Multimedia presentations.
5. Demonstration materials, instructions for the use of technical teaching aids (devices and equipment).
6. Materials for control of knowledge, abilities and skills of students (tests of various levels of complexity, situational tasks).

Recommended reading

Basic

1. Hygiene and Ecology. Підручник для студентів вищих медичних навчальних закладів / За редакцією В.Г.Бардова / Англійською мовою. - Вінниця: Нова Книга, 2009. - 688 с.
2. Vladimir A. Korobchanskiy, Michael P. Vorontsov, Alisa A. Musulbas. - Hygiene and Ecology. - Kontrast Publishing Enterprise, Kharkov, 2006. – 165 p.

Supplementary

1. Principles of Occupational Health & Hygiene / Edited by Sue Reed, Dino Pisaniello & Geza Benke. – 3rd edition. – Routledge, 2020. – 547p.
2. Health & Hygiene. – Philadelphia, Miami, Macon Crest, 2020. – 80p.

Information resources

1. Official Internet Representation of the President of Ukraine http://www.president.gov.ua/
2. The Verkhovna Rada of Ukraine http://www.rada.gov.ua/
3. Cabinet of Ministers of Ukraine http://www.kmu.gov.ua/
4. Ministry of Health of Ukraine http://moz.gov.ua/ua/portal/
5. Public Health Center of the Ministry of Health of Ukraine https://phc.org.ua/
6. Ministry of Education and Science of Ukraine http://www.mon.gov.ua/
7. Ministry of Ecology and Natural Resources of Ukraine http://www.menr.gov.ua/
8. State Service of Ukraine for Emergencies http://www.dsns.gov.ua/
9. National Security and Defense Council of Ukraine http://www.rnbo.gov.ua/
10. Permanent Mission of Ukraine to the UN http://ukraineun.org/
11. World Health Organization http://www.who.int/en/
12. Centers for diseases control and prevention http://www.cdc.gov/

Developer

The syllabus was compiled by Tamila Matviyenko, Associate Professor.