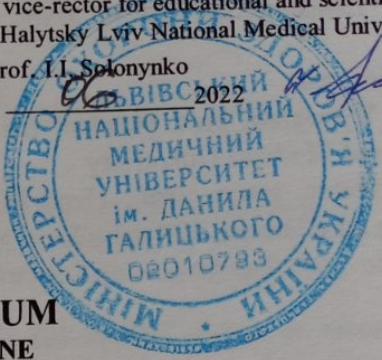


**DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY**

**Department of General Hygiene and Ecology**

“APPROVED BY”  
the first vice-rector for educational and scientific work  
Danylo Halytsky Lviv National Medical University  
assoc. prof. I.I. Selonynko

29”



2022

**CURRICULUM  
ON DISCIPLINE  
HYGIENE AND ECOLOGY**

**For preparation of specialists of the second (master's) level of higher education  
English-speaking students  
Branch of knowledge 22 "Healthcare"  
Specialty 222 "Medicine"**

**CONFIRMED**

at the meeting of the Department of General  
Hygiene and Ecology of Danylo Halytsky Lviv  
National Medical University

(protocol No 23 dated 09.06.2022)

Head of department

professor V.I. Fedorenko

**CONFIRMED**

by methodical commission of Preventive  
medicine of Danylo Halytsky Lviv

National Medical University

(protocol No 4 dated 09.06.2022)

Chairman of the cycle methodical  
commission

professor V.I. Fedorenko

**Lviv 2022**

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## INTRODUCTION

### **The working educational program on discipline "Hygiene and Ecology"**

according to the second higher education (master's level)

22 area of expertise "Health"

222 specialty "Medicine"

Education Program Master of Medicine

#### **Description of the discipline (abstract).**

Professional training of specialists from different medical specialties (hygienists, epidemiologists, infectious diseases, phthisiologists, surgeons, obstetricians, gynecologists, pediatricians, dermatologists, neuropathologists, etc.) can not be qualitative and effective without profound study of preventive disciplines - hygiene, ecology and epidemiology.

Knowledge of hygiene for doctors of preventive and medical profiles is necessary during professional activity:

1. Analysis of the health status of the population or its individual contingents in connection with anthropogenic and social conditions of life and work.
2. Diagnosis of diseases associated with the state of the environment and the environment.
3. Primary, secondary and tertiary prevention of diseases, organization, conduct and control of preventive measures.
4. Participation in the work of medical social-expert commissions of medical-labor expertise, drug control commissions, commissions of medical-labor expertise, and other medical commissions, whose task is to study and assess the health status.
5. Assessment of the conditions of stay in organized groups (children's, educational).
6. Analysis of the severity and intensity of labor and professional activities in order to determine the need for the transfer of workers with certain violations of their health for easier work, the appointment of medical and preventive nutrition, dispensary care, spa treatment, rehabilitation.
7. Ability to recommend methods and means of the regime of the day, training, work, personal hygiene, diet, the use of natural factors and a set of methods and means of tempering the body.
8. Provision of medical recommendations and instructions on the use of methods and means of prevention of intra-hospital infections, infections and invasions among the population at its service in the clinic, at home, in organized groups.
9. Carrying out sanitary-educational work among patients, in organized groups (children, educational, labor) and among the population as a whole and others.

These are the main, but not all, activities of a physician who need knowledge of hygiene and human ecology.

In connection with the above-mentioned medical education should help to form a young specialist not only clinical, primarily preventive, that is hygienic thinking, understanding of the role of factors of the environment and social conditions of life in the occurrence of violations of health and diseases, justification of preventive measures.

Medical care of the population causes the urgent need for profound knowledge of hygiene, primary, secondary and tertiary disease prevention and hygienic research skills.

The structure of the discipline	Number of credit hours, including				Year and semester of study	Type of control
	Total	Auditory		SEW		
		Lectures (Hours)	Practical classes (hours).			
<b>Subjects: Hygiene and Ecology</b>	6.0 credits / 180 hours.	20	70	90	<u>second</u> course (III-IV semesters)	Exam
<b>For the semesters</b>						
<i>Content module 1</i>	2.5 credits / 76 hours.	8	32	35	III semester	Intermediate semester
<i>Content module 2</i>	3.5 credits / 104 hours.	12	38	55	IV semester	Exam

**The subject** of the discipline is the study of the influence of environmental factors on human health, assessment of the risk factors for health and the justification of measures aimed at preventing diseases, ensuring optimal living conditions, improving health and extending human life.

**Interdisciplinary connections.** The study of the discipline "Hygiene and Ecology" is based on the knowledge of the basic natural sciences disciplines: medical biology, medical and biological physics, human anatomy, physiology, histology, cytology and embryology, biological and bioorganic chemistry, microbiology, virology and immunology and integrates with these disciplines. . Creates the foundations for the further study of epidemiology, infectious diseases, internal diseases and other clinical disciplines. Lays the foundation for the formation of knowledge, skills and skills that are determined by the ultimate goals of the program necessary for the next professional activity.

### **1. The purpose and tasks of the discipline**

1.1. The purpose of teaching the discipline "Hygiene and Environment" is the formation of skills and competences for future specialists (masters) to provide preventive guidance in the practice of the physician.

1.2. The main objectives of the study subjects "Hygiene and Environment" are:

- laying the theoretical foundations of health and the environment, as a science (terminology, laws, methods, principles of hygienic standardization, regulatory and methodological ensure the application of preventive measures) and practical skills related to: disease prevention infectious and non-infectious origin in accordance with the basis of current legislation of Ukraine;
- hygienic estimation of physical, chemical, microbiological factors and so on humans and the environment;
- use of favorable environmental factors of health to strengthen health, training the body and so on.

### **1.3 Competencies and learning outcomes.**

As required by higher education provides the discipline of students' **competencies**:

- *integrated competency* - the ability to solve common and complex specialized tasks and practical problems in careers in health care or in learning, which provides research and / or innovation and implementation is characterized by complexity and uncertainty of conditions and requirements.

- *General*:

- the desire to preserve the environment;
- usefulness of the study and master the latest knowledge;
- ability to apply knowledge in practical situations;
- knowledge and understanding of the subject area and professional activity understanding;
- official language ability to communicate both orally and in writing;
- ability to communicate in a foreign language;
- ability to use information and communication technologies;
- determination and persistence on tasks and responsibilities taken.

- *Special (Professional, Subject matter)*:

- usefulness to the evaluation of environmental exposure, socio-economic and biological determinants of the health of the individual, family and population;
- ability to conduct sanitary and preventive measures;

Determination of competencies according to the descriptors of the NRC in the form of "Matrix of competencies".

## Matrix of competencies

No.	Competence	Knowledge	Ability	Communication	Autonomy and responsibility
1	2	3	4	5	6
<b>Integral competence</b>					
Ability to solve typical and complex specialized tasks and practical problems in professional health care activities, or in the process of learning that involves research and / or innovation and is characterized by complexity and uncertainty of the conditions and requirements.					
<b>General competencies</b>					
1	The desire to save the environment. (CL14)	Know the problems of preserving the environment and how to save it	Be able to formulate requirements for themselves and others around the environment	To make proposals to the relevant authorities and institutions regarding measures for conservation and protection of the environment	To be responsible for the implementation of environmental protection measures within the scope of its competence.
2	Ability to learn and master modern knowledge. (ZK2)	Know the current trends in the industry and analyze them.	Be able to announce professional information, make informed decisions, acquire modern knowledge	Establish appropriate links to achieve goals.	Be responsible for the timely acquisition of modern knowledge.
3	Ability to apply knowledge in practical situations (ZK3)	Must have specialized conceptual knowledge gained in the learning process.	Be able to solve difficult tasks and problems that arise in professional activities.	A clear and unequivocal report of their own conclusions, knowledge and explanations, which justify them, to specialists and non-specialists.	Responsible for making decisions in difficult conditions
4	Knowledge and understanding of the subject area and understanding of professional activity. (CL4)	Have a profound knowledge of the structure of professional activity.	Be able to carry out professional activities that require updating and integration of knowledge.	Ability to effectively form a communication strategy in professional activity	Be responsible for professional development, the ability to further professional training with a high level of autonomy.
5	Ability to communicate in the state language both verbally and in writing. (CL9)	Have a thorough knowledge of the state language	Be able to apply knowledge of the state language, both verbally and in writing	Use professional language and business communication and when preparing documents, the state language.	To be responsible for fluent knowledge of the state language, for the development of professional knowledge.
6	Ability to communicate in a foreign language (3K10)	Have a basic knowledge of a foreign language	Be able to communicate in a foreign language.	Use a foreign language in professional activities	To be responsible for the development of professional knowledge using a foreign language.
7	Skills in the use of information and communication technologies. (CL11)	To have deep knowledge in the field of information and communication technologies used in professional activities	Be able to use information and communication technologies in a professional industry that needs updating and integrating knowledge.	Use information and communication technologies in professional activities	Be responsible for the development of professional knowledge and skills.
8	Determination and persistence on the tasks and duties taken. (ZK12)	Know the duties and ways of fulfilling the tasks	Be able to define the purpose and the task of being persistent and conscientious in the performance of duties	Establishing interpersonal relationships to effectively accomplish tasks and responsibilities	Responsible for the quality performance of the tasks
<b>Special (professional, substantive) competencies</b>					



1	The ability to assess the impact of the environment on the health of the individual, family and population. (CK19)	Know the environmental factors that affect health; methods of laboratory studies (4 on the list: study of the internal environment of the premises: indicators of microclimate, natural and artificial lighting, bacteriological and chemical pollution of air; radiation measurements (sound, vibration, ionizing) Individual radiometry); chemical, organoleptic, bacteriological examination of food and drinking water measurement of ergonomic indicators of severity and labor intensity)), assessment of the health of certain contingents, environmental factors and methods for determining the relationship between them measures to prevent the negative impact of environmental factors on health).	Be able to assess the health status of the population, the state of the environment and negative health effects. Be able to formulate preventive measures on the basis of data on the relationship between the state of the environment and the health status of certain contingents of the population.	To form conclusions about the state of health, on the basis of an association with environmental factors and to propose appropriate authorities and agencies to conduct preventive measures. Interact with specialists in the sanitary and hygienic sector and managers of enterprises, institutions and relevant departments on issues of nature conservation, environment	Be responsible for timely conclusions on the state of health on the basis of the negative impact of environmental factors on the timely introduction of propositions to conduct appropriate preventive measures.
2	Ability to perform sanitary and preventive measures (SK13)	Know system of sanitary and preventive measures among the troops assigned to the population. Know 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 treatment activity and rest, creating a favorable working environment and primary prevention of diseases and injuries; principles and methods of promoting a healthy lifestyle.	Have the skills to analyze the health of population groups and develop medical and preventive measures. Have the skills to compile an analytical certificate on the state of health of the population depending on the factors of production and environment. To be able to organize the propaganda of a healthy lifestyle, primary prevention of diseases and injuries of the population.	On the basis of the analysis of the state of health of the population, and the environment, to know the principles of providing analytical information to local authorities and health care; heads of industrial enterprises, concerning the implementation of measures to eliminate the harmful effects on the health of the population. Use local press for publication on measures for strengthening and improving the health of the environment, using radio, television, lectures and interviews.	To be responsible for timely and qualitative performance of measures to assess the health of the population, improve and improve the health of certain contingents, improve the environment, promote healthy lifestyles, primary prevention of diseases and injuries.

Learning outcomes:

Integrative final program learning outcomes for which formation Facilitates academic discipline

As a result of studying "Hygiene and Ecology" the student must **know**:

- ● problems of preservation of the environment and ways of its preservation; know methods for assessing the health of the population;
- ● environmental factors that negatively affect the health of the population;
- ● methods for assessing environmental factors and methods for determining the relationship between them;
- ● measures to prevent the negative impact of environmental factors on the health of the population;

As a result of studying "Hygiene and Ecology" the student must **be able to**:

- ● to formulate requirements for themselves and others around the environment;

- • to assess the health status of the population, the state of the environment and negative health effects;
- • to form preventive measures on the basis of data on the relationship between the state of the environment and the health status of certain contingents of the population.

Learning outcomes for disciplines: epidemiology, infectious diseases, hygiene and environment (6-year), radiation medicine, internal medicine, pediatrics, obstetrics, surgery.

## 2. Information volume of academic discipline

To study the discipline is given 6.0 ECTS credits 180 Hours

### Content module 1.

#### General issues of hygiene and ecology

##### *Specific goals:*

- To interpret the concept of hygiene as the theoretical basis of preventive medicine.
- Explain the laws (postulates) of hygiene and be able to use them in the practice of the physician.
  - Analyze the stages of development of hygiene, the establishment of the sanitary-hygienic service as a field of practical health care, the contribution of individual hygiene scientists to achieving its current level.
  - Bioethics and biosafety issues in prophylactic medicine.
  - To interpret principles of hygienic regulation, methods and means of hygienic research.
  - To interpret the basic concepts of the biosphere, environmental factors (physical, chemical, biological, psychogenic), their impact on the organism and public health and the leading role of social conditions.
    - To analyze and use favorable (health) environmental factors (solar radiation, climate, weather, other physical, chemical, biological factors and conditions) in practical medical practice.
    - Explain and use methods and means of protection against the influence of adverse environmental factors on the body and health (etiological factors, etiological risk factors) in domestic, industrial conditions, in hospitals, children's educational, educational and recreational facilities.
    - To interpret the general principles of planning and development of settlements, location and sanitary improvement in them residential, industrial, educational, medical and preventive, recreational facilities, institutions and institutions.
    - Make conclusions about the impact of planning, building, improvement and interior equipment of various types of residential, industrial and public buildings on sanitary conditions and population health.
    - To master the methods of determining the chemical pollution of air space.
    - Describe the methods of medical examination of individual dwellings (family doctor), community dwellings (dormitories, health facilities, treatment and prevention institutions), to give a hygienic assessment based on the results of these surveys.
    - Analyze the hygienic, physiological and epidemiological importance of water, its role in the emergence of endemic and the spread of infectious diseases and helminthiasis with the mechanism of transmission of pathogens.
    - Interpret organoleptic, chemical and bacteriological indicators of water quality from various sources.
    - Describe water supply systems for populated areas (centralized and decentralized). Identify and evaluate the types of water quality improvement - decontamination, discoloration, purification (lighting), desalination, decontamination and other (special) types of water treatment.
    - To interpret the hygienic value of the soil.
    - To plan and carry out preventive measures on soil sanitary protection for the prevention of diseases.
    - Describe and explain the peculiarities of the collection, removal and disposal of waste from medical institutions (sewage, waste from surgical, infectious units, etc.) and health facilities (recreation bases) with the presence and absence of sewage.
    - To interpret the meaning of rational nutrition for normal growth, physical development, preservation and strengthening of health, ensuring active longevity of a person.

- Explain the function of individual nutritional nutrients (proteins, fats, carbohydrates, vitamins, mineral salts, trace elements, flavors).
- Planning the organization of preventive measures to prevent the emergence and spread of infectious diseases with an alimentary transmission mechanism, bio- and geohelminths, food poisoning.
- To substantiate the importance of observing the conditions of a balanced diet (its quantitative and qualitative value, compliance with the diet, the quality of food and dishes to the enzymatic capacity of the digestive system of the individual, safety in the toxicological and epidemiological aspects) in the preservation and strengthening of health.
- Be able to organize a sanitary survey of food units of hospitals, health facilities, sampling of products and preparation for laboratory tests, and to evaluate their results.
- Biosafety issues in food hygiene.

**Topic 1 "Hygiene as a science, its purpose, objectives, contents, methods of hygienic research. Ecology as a science, its purpose, objectives, content, connection with other sciences "**

Hygiene as a science, its purpose, objectives, content, connection with other sciences.

Ecology as a science, its purpose, objectives, content, connection with other sciences.

Preventive orientation of domestic medicine, prevention of public and private, primary, secondary and tertiary, defining priorities.

Sanitation as a field of practice of health care. Varieties sanitation.

Value for hygiene knowledge of professional thinking and practice of doctors of various specialties.

The concept of the methodology as the study of scientific knowledge of reality. Fundamentals methodology hygiene: general philosophical laws and categories, their use in hygiene.

Theoretical basis of health, their essence, holding the most outstanding domestic scientists-hygienists for their scientific study, interpretation and practical application.

Environment and human health. Topical issues of hygiene in arid and humid climates of the tropical zone.

Methods and methods 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. Sources of infection with acute respiratory viral disease COVID-19 caused by SARS-COV-2 and features of the spread of the pathogen among humans. Measures of general and individual prevention of coronavirus infection.

Sanitary legislation. Varieties of sanitation. The concept of sanitary supervision, its organization. State Food and Consumer Service of Ukraine, main tasks. Laboratory center as a leading institution of the State Food and Consumer Services. Public Health Center of the Ministry of Health of Ukraine, main tasks.

**Topic 2 "Scientific bases and principles of hygienic regulation. Hygienic regulation of chemicals in the air, air of the working area, water of reservoirs, soil and food products. "**

Hygienic regulation of environmental factors. The concept of hygienic valuation in meteorology and climatology, physical factors of the biosphere (infrared, ultraviolet, electromagnetic, ionizing radiation, noise, vibration). The value of hygienic valuation of harmful chemicals. Methodical schemes, principles and methods of hygienic valuation in different environments. Hygienic regulation of chemicals in the air of the working area, atmospheric air, water of reservoirs, food products and soil. Limiting signs of harm, threshold concentrations, maximally ineffective doses, concentrations. Types of hygienic standards: maximum permissible concentration (MPC) in different environments, maximum permissible concentration one time (MPC o.t.) of the substance in the air and air of the working area, maximum permissible concentration daily average (MPC d.a.) of the substance in the atmospheric air, maximum permissible concentration of work area (MPC w.a .) in the production environment, the maximum permissible levels (MPL) of pesticides and nitrates in food products, PDD - permissible daily dose, ANM - the admissible number of migration (in the environment of polymer and other materials). Features of valuation of drugs in the air, water bodies, production environment, in certain food products. The concept of an experimental-experimental method of justification of the MPC (RSLA - roughly safe



levels of action). The concept of a combined, complex, combined action, assessment methods. Scientific-methodical and normative-legislative documentation on hygienic rationing of xenobiotics.

### **Topic 3 " The history of health and development. The current period of care "**

Empirical stage in the history of hygiene. Empirical hygiene in the countries of the Ancient East, China, Greece, Ancient Rome, Russia. Achievements of Hippocrates, Avicenna, D. Fracastoro, B. Rammatsini, in the field of preventive medicine.

Sanitary culture of Kievan Rus in the period of the empirical stage of development of hygiene. The activities of Evpracy, Feodosia Pechersk, Agapit Pechersk, Petro Mohyla, Danylo Samoiloivych, Yuriy Kotermak (Drohobych) in the field of health. M.Ya. Mudrova, G.A. Zakharina, S.P. Botkin, M.I. Pirogov on the role of preventive medicine.

Scientific and experimental stage of development of hygiene. The role of M. Pettencofer, F. F. Erisman, O.P. Dobrosлавин, V.A. Subbotin, G.V. Khlopin and other scientists in the formation of the scientific and experimental stage of development of hygiene. The formation of scientific hygienic schools (English, North American, French, Austro-Prussian).

History of development of hygienic science in Ukraine. Creation of departments of hygiene in medical universities of Ukraine. Contribution O.V. Korchak-Chepurkivsky, V.A. Subbotin, V.V. Udovenko, V.Ya. Podgaitsky, I.Ya. Gorbachevsky, O.M. Marzeyev, L.I. Medvid, P.I. Barannik, D.M. Kalyuzhnyj, V.Z. Martynyuk, G.Kh. Shahbazyan, R.D. Gabovich, Ye.G. Goncharuk, Yu.I. Kundiev, A.M. Serdyuk and others. Prophylactic direction in the activities of Ukrainian doctors in Galicia - E. Ozarkevich, M. Panchishin, R. Osinchuk, S. Parfanovich and others. Medical Sanitary Service in the UPR (B. Matyushenko), WUPR (I. Kurivets). History of the establishment and development of the Department of General Hygiene with Ecology of the LNMU named after Danylo Haltsky. Lviv Scientific School of Hygienists.

Contribution to the development of hygienic science of the twentieth century O.O. Mingh, F.G. Krotkov, Z.G. Frenkel, P.E. Kalmykov, M.F. Galanin, A.A. Letavet, SN Cherkynsky, V.O. Ryazanov, G.I. Rumyantsev, G.I. Sidorenko, G.I. Serdyukovsky.

History of occurrence, main stages of development and current state of the environment. Stages of ecology development as a science. Botanical and geographical reports of ecological content in the cultures of the countries of the Ancient East, China, Greece, Ancient Rome, Ukraine and Russia. Development of ecology in the countries of the world at different stages of development of society.

International cooperation in hygienic and environmental sciences in the modern period.

### **Topic 4 " Hygienic value of solar radiation "**

*Physical principles of solar radiation.*

Physical principles of solar radiation. The concept of solar activity, "solar wind" interplanetary magnetic field. Interaction of solar radiation with the magnetosphere and atmosphere of the Earth. Solar spectrum on the edge of the atmosphere and Earth's surface. The value of the ozone layer of the atmosphere, ozone "hole". The impact of solar activity on the biosphere, the human body and health.

Hygienic value of infrared radiation from the sun, pathology caused by excessive action and its prevention. Infrared irradiation artificial sources and its use in medicine.

Hygienic value of the visible solar radiation and its use in medicine, devices for definition. The issue of biosafety use of solar radiation.

*Hygienic value of ultraviolet solar radiation.*

Hygienic value of ultraviolet solar radiation and its use in medicine, devices for definition. 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 UV radiation and their comparative hygienic characteristics. Using natural and artificial UV radiation for the prevention of human diseases, the prevention of the harmful effects of physical, chemical and biological factors. Features of UV radiation on the elderly. Features of UVB for primary and secondary prevention of various diseases in the elderly.

Application of ultraviolet bactericidal radiation for air disinfection and disinfection of surfaces in the premises of health care facilities and institutions. (Order № 882 of 06.05.2021 "On approval of sanitary and anti-epidemic rules and regulations for the use of ultraviolet bactericidal radiation for air disinfection and disinfection of surfaces in the premises of health care institutions and institutions /

institutions of social services / social protection").The question of bioethics in the application of ultraviolet radiation.

### **Topic 5 "Hygienic mentioned components of the biosphere (atmosphere, hydrosphere, lithosphere) "**

The biosphere and its components (atmosphere, hydrosphere, lithosphere). V.I.Vernadsky's teaching of noosphere.

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

Biosphere denaturation. Major sources, types and effects of anthropogenic air pollution and indoor air. Characteristics of pollution sources in the village. Patterns of distribution of pollutants in the atmosphere, factors that affect the level of air pollution. The transformation of chemicals in the air. The impact of air pollution on health and living conditions of the population. Direct effects on the body: acute poisoning, chronic nonspecific and specific diseases. Indirect action by atmospheric circulation, relaxation of ultraviolet radiation, lower light levels and so on. Ways and means of preventing the negative impact of air pollution on health. Bioethical aspects of the biosafety issues and biosphere denaturation.

### **Topic 6 " Hygienic significance of climate, weather, their impact on public health "**

Weather, concept definition. Basic laws of weather formation. Weather forming and weather characteristic factors. Types of atmospheric circulation, the major formation of thermobaric, anticyclones, cyclones, atmospheric fronts. The direct and indirect impact of weather on human health. Medical weather classifications. Helio-meteorotropic reactions of healthy and sick man. Prevention helio-meteorotropic reactions: permanent, seasonal, urgent. The impact of weather on the dynamics of air pollution. The concept of temperature inversion.

Climate, concept definition. Climate forming and climate characteristic factors and indicators. General and applied (medical, construction) classification climate. Climatic features of different geographic regions. Climate, health and performance. The concept of health and medical geography and geographical mapping. Acclimatization. Acclimatization phases. Climatotropic reactions of a healthy and sick person, their prevention. Features of acclimatization in the conditions of the polar zones, deserts, highlands, dry and wet tropics. Use of the climate with therapeutic purpose. Specifics of the impact of various types of weather on the health of the elderly. Features of the impact of different types of climate on the health of the elderly. Manifestations of helio-meteorotropic reactions in the elderly and their prevention. Features of the phases of acclimatization in elderly people. Bioethical aspects and biosafety issues of natural and man-made factors on human health.

Features of the influence of the tropical climate on living conditions, working capacity and health of the population.

Hygienic characteristics of the climate and weather of hot and tropical latitudes.

Physiological features of mechanisms of thermoregulation in conditions of tropical climate and its influence on the organism and health.

Adaptation and acclimatization of a person in a hot and tropical climate. Health disorders and diseases characterized by conditions of hot and tropical climate and their prevention.

### **Topic 7 " Hygiene of settlements. Hygiene of housing. Microclimate, heating, ventilation, natural and artificial lighting, methods of measurement and hygienic assessment "**

Urbanization as a socio-hygienic problem. Positive and negative aspects of urbanization. Basic principles and requirements for the planning and development of the territory of the settlement. Housing, social and hygiene problems of housing construction in Ukraine and other countries of the world. Types of residential and public buildings.

Hygienic value of physical properties of air (temperature, humidity and speed of movement). Microclimate and its hygienic value. Types and effects of uncomfortable (cooling and heating) microclimate on human heat transfer and its health. Methods and indicators of evaluation of the complex action of microclimate on a human body (physical modeling, effective-equivalent

temperatures, resulting temperatures, and others). Estimated methods for assessing the impact of tropical climate on the state of the organism.

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

Methods of determination and hygienic assessment of dust, chemical and bacteriological air pollution. Carbon dioxide and oxidation of air as indicators of anthropogenic air pollution and ventilation of premises.

Basic concepts about species, hygienic value and indicators of ventilation. Necessary and actual volume and multiplicity of ventilation, their scientific substantiation. The notion of an air cube.

Unfavorable physical and chemical factors in the operation of household appliances. Hygiene and housing biosecurity.

Urban transport and other unfavorable environmental factors in a settlement (noise, vibration, electromagnetic fields, air pollution, excessive psychogenic loading, etc.), their sources and measures for elimination of harmful actions.

Hygienic and socio-hygienic problems of the modern village.

Hygienic features of planning and development of rural settlements.

Features of planning and building of populated areas in the conditions of arid and humid tropical climates.

### **Topic 8 " Hygiene of water and water supply "**

Water as an environmental factor, its hygienic value. Norms of water consumption depending on the level of communal and sanitary-technical improvement of settlements, living conditions, residence and human activities.

Scientific substantiation of norms of quality of drinking water. State sanitary rules and norms of drinking water quality. General hygienic requirements for the quality of drinking water, 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 value of the quality of drinking water in the biosafety population.

Water as an etiological factor of diseases of non-infectious nature. Hazard to human health of excessive water content of various natural chemicals and chemical compounds resulting from anthropogenic pollution in water sources and drinking water during its purification and other methods of improving quality. Concepts about biogeochemical provinces. Endemic fluorosis, water-nitrate methemoglobinemia. Features of the regulation of fluoride in drinking water in different climatic regions.

Hygienic value of insufficient content of some microelements in water for occurrence of caries (fluorine), endemic goiter (iodine) and other diseases.

Epidemiological value of water. Role of water and conditions of water supply in the spread of infectious diseases. Classification of infectious diseases, the causative agents of which are transmitted by water (cholera, typhoid fever, dysentery, etc.).

Sources of water supply, their comparative hygienic characteristics. Zones of sanitary protection. Bioethical aspects and issues of biosafety use of water supply sources.

Centralized and decentralized water supply systems, their comparative hygienic characteristics. Methods of water purification: basic (lighting, discoloration and disinfection) and special (non-iron, softening, demineralization, deodorization, decontamination, fluoridation, depletion and others).

General scheme of arrangement of main structures of water supply from underground and superficial sources of water supply. Water supply network and its arrangement. Causes of pollution and infection of water in the water supply network. Sanitary supervision of the water supply of populated areas.

Hygienic requirements for the arrangement and operation of mine wells and sheds of springs. "Sanation" of wells and disinfection of water in them.

Hygienic characteristics of water resources and water supply sources in the arid (dry) and humid (humidified) zones of the tropics.

Features of physiological functions of water in the conditions of the tropics (structural, exchange, transport, excretory, heat exchange, and others).

Hygienic requirements for drinking water quality and their features in conditions of tropical climate. International standard for drinking water quality and peculiarities of its use in the conditions of the tropics.

Hygienic characteristic of methods and means of cleaning, disinfection, special methods of water conditioning in the conditions of the tropics.

### **Topic 9 "Hygiene of the soil and cleaning settlements"**

Soil, definition of the concept. Origin, formation, mechanical structure, physical properties and chemical composition of the soil. Hygienic assessment of different types of soils. Geochemical, geoenvironmental characteristics of soils.

Sources of soil pollution in the current conditions of industrialization and chemicalization of the national economy. Impact of contaminated soil on health and sanitary conditions of the population. The role of soil in the emergence and spread of infectious diseases (anaerobic infections) and invasions. Soil and diseases of non-infectious etiology. Processes and indicators of soil self-purification. Assessment of the sanitary state of the soil by chemical and biological indicators.

Theoretical bases and methods of hygienic regulation are the maximum permissible concentrations of harmful chemical substances in the soil. The value of the sanitary state of the soil and the sanitary protection of water bodies in the biosafety population.

Principles of clearing populated places. 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-epidemic significance.

Canalization of populated areas, its importance in the prevention of infectious diseases. Impact of the sanitation of the inhabited places on the sanitary condition of the soil and living conditions of the population.

General scheme and facilities for household sewage treatment. Sewage treatment and sanitary protection of reservoirs. Scientific fundamentals for the protection of open water bodies. The notion of a small sewage system and conditions of its use.

Methods of disposal and utilization of industrial and radioactive waste. Hygienic requirements for places and types of burial of the deceased. Hygienic characteristic of cremation.

### **Topic 10 "Nutrition as a health factor. Scientific fundamentals of rational nutrition. Features of nutrition of people of different age groups, professions. Method of calculation of energy consumption of man and his needs in nutrients. An assessment of the adequacy of food on the menu-layout. Biosafety issues in food hygiene "**

Physiological and hygienic basics of nutrition. Meaning of nutrition for health and physical development. Theories of nutrition, functions of food and types of nutrition. Scientific fundamentals of rational nutrition. Biosafety issues in food hygiene.

Alimentary pathology, its prevalence and classification.

Methods of determination of human energy consumption and needs in the basic nuclei. Methods of determining the energy consumption of the elderly and its needs in the basic nuclei. Methods of assessing the adequacy of food on the menu-layout. Standards of physiological need in nutrients and energy for different groups of population, their scientific substantiation. Features of the body's needs in energy, quantity and ratio of nutrients in a tropical climate.

Principles of nutrition of people of different age groups, mental and physical labor, students, athletes.

Nutrition in environmentally unfavorable environments and harmful industries.

Baby food products and mixtures.

Products of hero-protective direction.

### **Topic 11 "Methods of studying and assessing the human nutritional status and medical control over the provision of the body with vitamins. Prevention of alimentary and alimentary-conditioned diseases "**

The concept of rational, preventive, curative (diet) and prophylactic nutrition, their basic principles.

The concept of the nutritional status of an organism and the methods of its evaluation. Bioethical aspects of evaluation of human food status.

Alimentary diseases, their classification (protein-energy insufficiency, hypovitaminosis, avitaminosis), their clinical manifestations and prophylaxis. Alimentary-conditioned diseases, prophylaxis. General characteristics of diseases of malignant origin among the population of tropical regions and methods and means of their prevention.

Methods and means of medical control of nutrition of certain population groups. Hygienic nutrition supervision of different age groups, professions.

Methods of medical control of food in the population of the tropical region. Estimated methods for assessment and nutrition correction.

## **Topic 12 "Physiological and hygienic value of nutrients and hygienic characteristics of food products. Methods of investigation and prevention of food poisoning "**

Physiological and hygienic role of proteins. Scientific substantiation of protein needs. Hygienic characteristics of proteins of animal and plant origin. Protein Quality Indicators. Sources of proteins and essential amino acids.

Physiological and hygienic role of fats. Indicators of quality of fats of different origin. Physiological and hygienic role of polyunsaturated fatty acids, phosphatides, sterols. Scientific substantiation of the body's needs in fats. Sources of Fat. Culinary Fats. "Overheated Fats".

The physiological and hygienic role of carbohydrates. Scientific substantiation of the organism's needs in simple and complex carbohydrates. Indicators of quality of carbohydrates. Sources of carbohydrates. Concepts 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. Nutritional and biological value of food products. Cereal, leguminous and oilseeds, vegetables, fruits and berries. Meat and meat products. Fish, poultry and other food products. Eggs Milk and dairy products. Dairy Fats. Genetic evaluation of food quality and safety.

Hygienic characteristics of the most common food products in the tropical region.

Scientific and technological progress and its influence on the quality of food products. Genetically modified foods and socio-hygiene problems associated with their use. Issues of food hygiene in the population's biosafety.

Food poisoning, their classification.

Food poisoning of microbial nature. Food Toxic Infections, Etiology, Pathogenesis, Prevention. Bacterial toxicosis. Botulism, etiology, pathogenesis, prophylaxis. Staphylococcal toxicosis, etiology, pathogenesis, prophylaxis. Mycotoxicosis, their etiology, diagnostics, clinic, prophylaxis

Food poisoning of non-microbial nature. Value of food chains in the migration of toxic and radioactive substances from various objects of the environment to the human body. Value of residual quantities of chemicals in food products.

Prevention of food poisonings of microbial, non-microbial nature and unconsolidated etiology, duties of a doctor in the investigation of food poisoning and in their prevention. Guidance-methodological and legislative documents used in the investigation of food poisonings and their prevention. Questions of bioethics and biosecurity in the investigation of cases of food poisoning.

The role of aerogenic, purulent diseases, healthy carriers of intestinal infectious agents among staff of food units in the emergence of food poisonings of microbial nature and infections.

Toxicological and epidemiological problems of nutrition of the population of tropical regions.

Methods of preservation of food products, their hygienic characteristics. Nutritional supplements, their hygienic characteristics.

### **Content module 2**

#### **Special hygiene and ecology**

##### *Specific goals:*

- Identify factors and environmental conditions that affect the health of children and adolescents.
- Evaluate the level of harmony of physical and neuropsychological development) and possess methods of integrated assessment of the health status of children and adolescents.

- To learn and use methods of hygienic assessment of physical development of children and adolescents and organized children's groups.
- To use positive environmental factors as health factors and to prevent the negative impact of the environment on the health, physical, mental and intellectual development of children and adolescents.
- Be able to apply organizational measures of the educational and educational process in preschool and general educational institutions of different types (regulation of the day regime, school and extracurricular load and rest, elements of physical activity and nutrition of children of different age groups) for the preservation and strengthening of the health of children and adolescents.
- Explain the hygienic features of the planning and operation of preschool and school buildings, as well as their separate premises (classes, offices, workshops, etc.) to ensure the proper conditions for pupils' stay.
- Know and use in medical practice sanitary legislation in the field of hygiene of children and adolescents.
- To interpret the concept of "work, work" from the physical, physiological, and social point of view.
- Explain the physiological changes in the body that arise in the process of physical and mental work in order to prevent and prevent premature fatigue, prevent fatigue and the occurrence of violations in the health of workers.
- Know the basics of preventive measures to eliminate the forced position of the body, over-strain of individual organs and systems, monotony of labor, its severity, tension and related pathological conditions.
- Planning preventive measures on the negative influence of harmful and dangerous factors of the working environment (physical, chemical, biological, psychological, social) and working conditions on the worker's organism.
- To interpret the basis of health and labor legislation in the field of occupational health.
- Know biosafety in occupational hygiene. Biosafety of labor in industry and agriculture.
- To know the hygienic requirements for land plots for placement of medical and preventive health facilities, their development, planning, equipment and operating conditions of separate departments (reception, somatic, children's, infectious, psychoneurological) ward sections and chambers, specialized premises.
- To interpret the importance of the optimal hygienic regime of treatment and prophylactic institutions for improving the efficiency of treatment of patients, prevention of intra-hospital infections, the creation of optimal working conditions for staff and their improvement.
- To have knowledge about harmful factors of production of doctors of different specialties.
- To substantiate and plan the organization of diet, medical and preventive nutrition for the respective categories of the population and individuals.
- To have knowledge about the sanitary and hygienic and anti-epidemic regime in hospitals, health facilities, measures for the prevention of intra-natal infections.
- To interpret hygienic value for treatment and rehabilitation of patients, creation of optimal conditions of work of personnel: lighting, heating, ventilation, sanitary treatment of premises, patients, collection, removal and disposal of medical waste.
- Explain the biological effects of ionizing radiation and use in medicine, science, energy, and other industries.
- To draw conclusions on radiation control over the working conditions with closed and open sources of ionizing radiation and protection against its adverse effects by legislative, organizational methods and methods based on the physical laws of radiation erosion.
- To treat (analyze) anti-radiation protection of personnel and radiation safety of patients in radiological and radiological units of medical institutions.
- Understand biosafety in the activities of health care institutions.
- Know the main sources, ways and extent of environmental pollution.
- To have knowledge about a healthy lifestyle, methods and means of combating tobacco smoke, alcoholism, drug addiction and substance abuse, and to implement them in the daily life of different contingents of the population.



- Understand the importance of improving the health of the elements of personal hygiene, methods and means of body hardening (solar radiation, air, water, physical culture) and plan their implementation. Bioethical aspects of personal hygiene.
- Organize and implement hygienic knowledge about the selection and use of detergents, chemical skin protection products, and the use of steam and dry-bath tubs among various contingents of the population and patients of medical and prophylactic institutions.
- To interpret hygiene requirements for clothing and footwear and individual means of protection of the body, vision, hearing and respiratory organs.
- To generalize and apply in scientific practice the scientific principles of psychohygiene, psychoprophylaxis, medical biorhythmology and chronic hygiene.
- To master the hygienic features of the habitation and labor of the population in conditions of tropical and hot climates
- To master the method of estimation of heat exchange and thermoregulation of an organism in conditions of hot and tropical climate.
- To understand the peculiarities of the water supply of the population of tropical regions.
- To master the methods of medical control of the water supply of the population of hot and tropical regions and the prevention of diseases of water origin.
- To know the socio-hygienic, toxicological, epidemiological features of the nutrition of the tropics.

### **Topic 13 "Actual issues of hygiene of children and adolescents. Questions of Bioethics and Biosafety in the Hygiene of Children and Adolescents "**

Factors of the environment and social conditions of life affecting the processes of forming the health of children and adolescents. Shifts in health and morbidity due to the effects of factors of the environment and the conditions of students' stay in educational institutions.

General patterns of growth and development of child and adolescent organism. Criteria for evaluation and health indicators for children and adolescents. Features of distribution of children and adolescents by groups of health.

Physical development as an important criterion for assessing the health status.

Basic indicators of physical development. Rules of anthropometry. Requirements to the tables of regional standards for physical development. The concept of biological and calendar age. Indicators of the biological development of children and adolescents. Modern concepts of acceleration and deceleration (retardation).

Methods of evaluation of physical development of children and adolescents. Methods of assessing the health and physical development of organized children's groups.

Organization of children's nutrition in children's preschool and school educational institutions and control over it. (Resolution № 305 of March 24, 2021) (Kyiv) "On approval of norms and procedures for the organization of nutrition in educational institutions and children's health and recreation facilities." (With changes made in accordance with the Resolutions of the Cabinet of Ministers 786 of 28.07.2021, № 823 dated 11.08.2021 and № 871 dated 18.08.2021)).

The task of the doctor is to organize and conduct recreational activities in children's colleges (schools, gymnasia, lyceums, colleges, boarding schools, vocational schools, orphanages, preschools, labor camps and recreation centers, out-of-school facilities).

Child health and health management system. The role of the family doctor in the formation of favorable hygienic conditions for the upbringing and education of the child.

### **Topic 14 "Hygienic assessment of the regime of the day and educational process of children of different age groups"**

Anatomical-physiological and psychophysiological features of the organism of children and adolescents of different age and sex groups. Medical, physiological and psycho-pedagogical criteria for assessing the level of development of the child. Methods of studying the age-old psychophysiological features of the organism of children and adolescents. Shifts in the state of health and diseases that are caused by the irrational organization of the educational process.

The concept of school maturity. Hygienic bases and methods for determining the child's functional readiness for schooling.

The concept of the regime and the main mode elements. Features of hygienic standardization of students' daily activities. Hygienic principles of compilation and evaluation of the regime of children and adolescents of different age groups.

Sanitary regulations for general secondary education institutions (Order № 1111/35394 dated 10.11.2020)

Hygienic requirements for the organization of educational process in modern educational institutions. Features of the educational process in gymnasiums, lyceums, children's sanatoria and health facilities. Hygienic requirements for out-of-school activities and leisure time for students.

Hygienic requirements for the schedule of classes in the school and the methodology for its assessment. Hygienic requirements for the organization and methodology of conducting a lesson.

Hygienic requirements for school textbooks and tutorials.

### **Topic 15 "Methodology of hygienic assessment of planning, equipment and maintenance of children's preschool institutions, educational institutions of the fate of children and adolescents"**

Hygienic requirements for a land plot, a building and a group section of a preschool institution. The principle of group isolation and its value.

Hygienic requirements for a land plot and building of a comprehensive educational institution according to sanitary regulations for general secondary education (2020).. The principle of functional zoning and its significance. Hygienic requirements for planning, arrangement, equipment, microclimate, ventilation, lighting and sanitary-technical improvement of the main premises of educational institutions.

Hygienic requirements for educational furniture and their physiological substantiation. Rules for marking parties, other primary furniture and planting students. Hygienic requirements for the placement of school furniture in the school class.

Basic preventive measures to improve the sanitary and hygienic conditions of students' stay in modern educational institutions.

### **Topic 16 "Methodology of hygienic control over the organization of physical education and labor training for children and adolescents. Doctor-professional counseling and medical professional selection of adolescents in school and outpatient clinics "**

Hygienic principles of rational organization of physical education of children and adolescents. Types, means and forms of physical culture in modern educational institutions.

The concept of motor activity. Methods of quantitative measurement and hygienic assessment of motor activity. Prevention of hypokinesia. Physiological and hygienic basis of assessment of physical education lesson. Hygienic requirements for training places for physical education.

Medical control over the organization of classes by physical culture and hygienic aspects of medical provision of physical education of children and adolescents. Physiological and hygienic bases of the body hardening of children and adolescents. Basic Types, Principles, and Ways to Organize Hardness ..

Hygienic principles of rational organization of labor and polytechnic education of children and adolescents. Physiological and hygienic bases for controlling labor education of pupils. Hygienic requirements for the content, the regime and conditions of organization and conducting of labor training in conditions of various types of modern educational institutions.

Professional orientation as a hygienic problem. Professiography. Modern system of professional orientation, its functions and leading components. Scientific fundamentals of medical-professional consultation. The concept of professional selection. Methods of forecasting professional success.

### **Topic 17 "Current issues of occupational hygiene. Occupational health of doctors of different specialties. Biosafety in hygiene of work. Method of hygienic assessment of the severity and intensity of labor "**

Work and work, definition of concepts, social and 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 fatigue, measures to prevent fatigue.

The notion of occupational hazards and occupational diseases, their classification.

Diseases associated with high levels of neuropsychic stress, intensification of production processes.

Organization of the work place. Monotony of labor, its prevention. Forced position of the body, the stresses of individual organs and systems and the prevention of diseases associated with them. The concept of the severity and intensity of labor. Ergonomics.

Physiological and hygienic features of the labor of an elderly person. Indicators of the severity and tension of the elderly labor and their changes during labor activity. Influence of unfavorable factors of the working environment on the rate of aging of the worker.

Occupational health of doctors of different specialties. Occupational health and health of medical workers. Harmful and dangerous factors of professional activity of medical workers.

Hygienic requirements to the working regime. Sanitary legislation on labor protection. (Labor Code of Ukraine). Bioethics and biosafety issues in occupational health.

Features of the organization and working conditions in conditions of arid and humid climate of the tropical zone. The parameters of the microclimate, in which the implementation of physical labor becomes impossible.

**Topic 18 "Methodology of hygienic assessment of hazardous and harmful factors of the production environment and the reaction of the organism to their influence. Production dust, impact on the body, prevention of dust pathology. Occupational toxicology. Bioethics and biosafety issues in occupational health. Method of hygienic assessment of physical factors of the production environment. Features of occupational hygiene in various industries and agriculture. Pesticides, agrochemicals and biosecurity of the population ".**

Harmful and dangerous factors of working conditions and the working environment. Influence of physical factors of the production environment (noise, vibration, high-frequency electromagnetic oscillations, etc.) on the health of workers.

"Noise" disease and its prevention. Vibrational disease and its prevention.

Electromagnetic fields of radio frequencies and industrial frequency. Prevention of adverse effects of electromagnetic fields. Laser radiation. Influence on human health of computer equipment, mobile phones, hygienic rules of their exploitation.

The production microclimate, the factors that determine it, the impact of unfavorable microclimate on health workers, preventive measures.

Peculiarities of work hygiene at reduced and increased atmospheric pressure. Altitude, mountain, decompression, ceson diseases, their prevention.

Method of determination of dustiness, chemical contaminations of the production environment.

Chemical factors of the production environment. Carcinogenic, mutagenic, allergenic factors in the production, prevention of their harmful effects.

Production dust, its classification, prevention of harmful effects. Occupational toxicology. Comprehensive, 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. Bioethics and biosafety issues in the prevention of harmful and dangerous factors of the production environment.

Professional poisoning and their prevention.

Hygiene works in the main industries of industrial and agricultural production, women and adolescents, the elderly and the disabled.

Prevention of acute and chronic poisoning with pesticides. Requirements for pesticides with regard to environmental biosecurity.

Means of individual protection against harmful and dangerous factors of the production environment (body, vision, hearing, respiratory system).

Occupational toxicology. Comprehensive, combined, combined action of industrial hazards. Scheme of toxicological evaluation of chemicals. Significance of toxicity. The notion of cumulative properties and long-term consequences.

## **Theme 19 "Hygiene of medical and prophylactic institutions and prevention of nosocomial infections, infections associated with medical care. Safety issues in the activity of medical and preventive institutions. Hygienic assessment of the placement and planning of individual structural subdivisions of the hospital on the materials of the project "**

The value of the optimal hygienic regime of treatment-and-prophylactic establishments for improving the efficiency of treatment of patients, prevention of infections associated with medical care., HIV infection, creation of safe working conditions of staff and their improvement.

Modern systems of building hospitals (centralized, block, decentralized, pavilion, mixed), their comparative hygienic assessment, prospects for improvement. Hygienic requirements for land placement of hospitals.

The concept of situational and general plans for the development of hospitals, hygienic requirements to the main indicators of development (remoteness from sources of air pollution, soil, area, density of development and landscaping, nosocomial of buildings, sanitary improvement of the site), functional zoning of the territory.

Measures for the prevention of nosocomial infections and infections associated with medical care.

Hygienic requirements for planning, equipment and operating conditions of the therapeutic department, reception departments (for somatic, infectious, children's departments).

Chamber section, its composition, hospital chamber, variants of its planning and equipment for somatic patients.

Hygienic requirements for the area, cubic meters of the chambers, their scientific justification. Requirements for the orientation of the windows of the chambers, microclimate, air, lighting, heating, ventilation, noise regime. Norms of lighting, microclimate, carbon dioxide content as an indicator of chemical pollution of air, bacterial insemination.

Features of collection, temporary storage, removal and disposal of waste from medical treatment facilities (sewage, waste from surgical, infectious and other departments), their features in rural hospitals, separately located health-improving facilities.

Sources of environmental pollution by medical and pharmaceutical waste, danger to the environment and human beings. State sanitary-and-epidemiological rules and regulations for the treatment of medical waste. Categories of medical waste. Stages of the waste management system. Ways of disposal of medical and pharmaceutical waste. Medicinal products as pollutants for the environment, their utilization.

## **Topic 20 "Features of planning and arrangement of specialized hospitals and departments"**

Hygienic requirements for the land plot of specialized hospitals (infectious, pediatric, psychiatric) and dispensaries (tuberculosis, cancer, etc.).

Hygienic requirements for the development, planning and operation of infectious, pediatric, obstetrical, gynecological, surgical and clinic departments of the hospital.

Features of planning boxes, semiboxes in infectious, children's departments of the hospital.

## **Topic 21 "Hygienic assessment of conditions of patients' stay and occupational health of medical workers in medical institutions"**

Sanitary-hygienic and anti-epidemic regime in a hospital, polyclinic.

Hygienic requirements for personal hygiene of patients.

Requirements for the prevention of respiratory and intestinal diseases among patients and staff during epidemics.

Mode, methods and means of wet cleaning of premises with the use of antiseptic drugs, ventilation of premises, isolation of patients.

Hygienic requirements for sanitary equipment, operating conditions of the therapeutic and surgical department, surgical units, children's, infectious and other specialized departments. Hygienic criteria of microclimate, heating, ventilation, illumination of hospital premises, water supply, sewerage. Criteria for assessing the microbial air pollution of the inpatient facilities.

Hygiene of Labor and Health Care of Medical Workers. Harmful and dangerous factors of the professional activity of medical workers. Hygienic features of working conditions and health of

specialists of surgical, therapeutic profile, infectious diseases, psychoneurologists, doctors of clinics, dentists, family doctors. Professional and professionally conditioned healthcare workers. Measures to improve the working conditions of health workers. Means and measures of individual protection of medical workers from infection with the causative agent of coronavirus infection COVID-19.

### **Topic 22 "Primary HIV prevention"**

The place of HIV infection in infectious morbidity of the population. Sources of infectious agent. Ways and factors of transmission of HIV infection. Risk contributors to the onset of the disease. The incidence of HIV infection (AIDS) in Ukraine. Primary HIV prevention. Measures to prevent HIV infection in health facilities. Prevention of HIV infection by injecting drug use. Methods of preventive work among schoolchildren, teenagers and youth in relation to prevention of infection with HIV-infection. The role of sanitary-educational work.

### **Topic 23 "Hygienic bases of medical and preventive and medical nutrition. Catering in hospitals "**

Curative and preventive nutrition, Principles of construction, purpose, species, rations. Composition of rations of medical and preventive nutrition.

Curative and dietary nutrition as an element of complex medical and dietary therapy, a means of preventing complications and relapsing diseases. The value of proteins, fats, carbohydrates, minerals and vitamins in the diet. Pharmacological action of food. Basic principles of construction of medical nutrition. Modern requirements for the improvement of medical (diet) nutrition in health care institutions. Order of the Ministry of Health of Ukraine No. 931 dated October 29, 2013 "On the improvement of the organization of medical nutrition and the work of the dietary system in Ukraine".

Types of food blocks. Sanitary and hygienic requirements for the planning of production equipment and maintenance of premises of the food unit. Hygiene of the processing process of food products. Medical supervision of harvesting, storage of food products, cooking, ensuring the quality and taste of food and finished food, distribution to the office. Sanitary and hygienic requirements for the transport of finished food from the kitchen to the ward office. Sampling and evaluation of the fullness and quality of dishes by another doctor. Organization of medical nutrition in medical institutions. Responsibilities of the staff of the hospital's diet service.

### **Topic 24 "Actual issues of radiation hygiene. Questions of bioethics and biosafety in the application of ionizing radiation. Radiation pollution of the environment. Hygienic aspects of the Chernobyl accident "**

Actuality of hygienic problems of radiation protection of workers with industrial sources of ionizing radiation and radiation safety of the population.

Physical bases of radiation safety and radiation protection: the nature and nature of radioactivity, types of nuclear transformations, ionizing radiation, their qualitative and quantitative characteristics, use in practice.

Qualitative and quantitative characteristics of radionuclides.

Hygienic characteristic of ionizing radiation and its 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 the basic conditions on which it depends. Deterministic and stochastic effects of irradiation of people, conditions of their occurrence.

Ionizing radiation as a factor in the environment, their sources (natural, technogenically enhanced by natural origin, industrial), their characteristics. Radiation background.

Patterns of formation of radiation load of the population, its hygienic estimation, ways of reduction. Questions of bioethics and biosafety in the application of ionizing radiation.

• *Radiation safety of the population in the places of its residence.*

Radiation safety of the population in the places of his residence, factors that determine it (chronic radiation by technogenically-enhanced sources of natural origin, medical radiation, radioactive contamination of the environment).

Natural radionuclide radon and medical X-ray radiological diagnostic procedures for the population as the main components of human radiation load, their hygienic assessment and special measures for reducing the radiation burden of people due to these factors.

• *The concept of population living on the territories of Ukraine in connection with the Chornobyl catastrophe*

Chornobyl 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 areas that have been exposed to radioactive contamination.

The concept of population living on territories of Ukraine with increased levels of radioactive contamination as a result of the Chornobyl disaster and the Laws of Ukraine on the legal regime of these territories and the legal status of the affected population.

### **Topic 25 "Methods and means of radiation control - calculation and instrumental. Estimated Methods for Assessing Radiation Safety and Parameters for Protection against External Irradiation "**

Ionizing radiation as industrial harm. Conditions on which the radiation hazard depends on working with radionuclides and other sources of ionizing radiation.

Measures for protection from external radiation, based on the physical laws of its relaxation (protection by quantity, time, distance, shielding).

The principles that underlie the choice of material and the calculation of the thickness of protective screens from  $\beta$ ,  $\gamma$ , X-rays.

The value of calculation methods for assessing the radiation hazard and the parameters of protection against external radiation in the complex of measures against radiation protection personnel.

### **Topic 26 "Hygienic assessment of radiation protection personnel and radiation safety of patients in the application of ionizing radiation in medical institutions"**

Ionizing radiation as industrial harm. Conditions on which the radiation hazard depends on working with radionuclides and other sources of ionizing radiation. Closed sources of ionizing radiation, their purpose, peculiarities of radiation hazard and radiation protection when working with them (external irradiation). Open sources of ionizing radiation, their purpose, peculiarities of radiation hazard and anti-radiation protection when working with them (external and internal radiation).

Radiation protection of personnel and radiation safety of patients in radiological units of medical institutions. Features of radiation safety and anti-radiation protection in structural subdivisions of the radiological department of the hospital.

Radiation and medical control during work with radionuclides and other sources of ionizing radiation, its organizational forms, types, programs, devices, criteria for evaluation of results, management documents.

Hygienic regulation of ionizing radiation, scientific concepts on which it is based. The main provisions of "Norms of radiation safety of Ukraine (NRSU - 97)" and "Basic sanitary rules for the securement of radiation safety of Ukraine (BSRU - 2005)".

### **Topic 27 "The main sources, ways, scale of environmental pollution. Natural and man-made disasters. Organization of sanitary and hygienic measures in emergency situations "**

The main sources, ways, scale of pollution of the environment. Classification of emergencies by origin, scale, rate of development. Natural disasters, man-made disasters. Chemical catastrophes, nuclear accidents. Chernobyl nuclear power accident. Environmental and medical consequences of disasters.

International Organizational Structure on Disaster Elimination and Medical Assistance, National Forces for the Elimination of the Emergency in Ukraine. Sanitary hygiene measures in the area of emergencies. Measures aimed at maintaining health, improving the efficiency of liquidators. Substantiation of time and emergency MAC for liquidators of emergency situations and population. Individual remedies for the elimination of fires and consequences of emergencies. The working conditions of liquidators in the area of emergency situations.

### **Topic 28 "General patterns of human adaptation to different environmental conditions. Ecologically conditioned and environmentally dependent diseases "**

Human ecology in different climatic conditions. The general laws of adaptation of the human organism to different environmental conditions. Stress, Eustress, Distress.



Urboecology. Urbanization, its positive and negative aspects. The degradation of the biosphere in large cities. Housing Ecology. Planting of cities.

Pollution of the environment and human health. The role of environmental factors in the formation of human health. Human health as an integral indicator of the state of the environment. Influence of abiotic, biotic and anthropogenic factors on human health and life expectancy. Demographic Problems of Ukraine. Concepts of ecologically and environmentally dependent diseases. The state of health of the population of Ukraine in connection with pollution of the environment.

### **Topic 29 "Methodological and methodological bases for the study of health depending on the state of the environment"**

The concept of "methodology", its application in hygiene. Areas of observation for the study of health, depending on the state of the environment. Definition of the concept, requirements for the choice.

The method of the integrated assessment of the environment. Methods of longitudinal and transverse epidemiological research, definition, essence, types. Impact of polluted air, water and soil on public health; methods of its detection. Stages of Identification and Evaluation of Interconnections of Environmental Factors on Public Health. Environmental risk factors, their classification and influence on the formation of public health. The concept of risks (relative, attributive, population). Diagrams of the study of the impact of environmental factors on the health of the population. Biomarkers as indicators of exposure to environmental factors.

Definition of the concept of "health", its criteria. Indicators that characterize the health of the population. Criteria for distribution of population by groups of health. The method of determining the integral index of health.

### **Topic 30 "Healthy lifestyle, personal hygiene. Physical culture, basics of hardening. Hygiene clothing and footwear. Hygienic evaluation of detergents, fabrics and household, industrial and hospital clothes. Prevention of alcoholism, drug addiction, substance abuse, tobacco smoking "**

Healthy Lifestyle, Definition, Content. Personal hygiene as a branch of hygienic science, its content and importance for the preservation and strengthening of health in modern conditions.

Hygiene of the body, skin and hair. Hygiene of the cavity of the mouth and teeth, care products, their hygienic assessment. Baths as a means of maintaining purity and stimulating the physiological functions of the skin. Modern detergents, their hygienic evaluation.

State sanitary norms and rules "Materials and products of textile, leather and fur. Basic hygienic requirements (Order of the Ministry of Health of Ukraine № 113829. dated 12.2012).

Hygienic requirements for clothing and footwear for different age groups. Comparative hygienic characteristics of clothing and footwear from natural and artificial fabrics and materials.

Peculiarities of personal hygiene in the conditions of the arid and humid climates of the tropical zone.

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 work of tanning salons and photocopies. Hygienic estimation of steam and dry 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 outdoor walks. Organization of hygienic control over the dosage of physical activity.

Medical and social problems, ways and means of prevention of active and passive tobacco smoking, excessive consumption of alcohol, substance abuse and drug addiction.

The main ways and means of hygienic education and education of different groups of the population.

Peculiarities of personal hygiene in the conditions of the arid and humid climates of the tropical zone.

### **Topic 31 "Psycho-hygienic foundations of everyday human activities"**

Fundamentals of psychohygiene. Age psychohygiene. Psychoprophylaxis. Features of the influence of hereditary factors and environmental factors on the mental health of children and adolescents. The structure of the personality features of a person (properties of temperament and

character, motivational orientation, peculiarities of the neuro-psychic state, etc.). Psychohygienic principles of rational organization of educational and professional activity. The iatrogenic, curative and prophylactic meaning of the word in everyday life, in the workplace, in the communication of the doctor with the patient. Autotraining.

### **Topic 32 "Scientific Fundamentals of Medical Biorhythmology and Chronohygiene"**

Biological rhythms and health status. Prerequisites and reasons for the emergence 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. Combination of the training time with time optimum of physiological functions of the organism. 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 the basis for the prevention of desynchronosis.

Psychohygienic foundations of the scientific organization of mental and cinematographic work.

### 3. Structure of discipline

	Topic	Lectures	Practical training	SEW	Ind. Work
<i>Content module I. General hygiene and ecology</i>					
Topic 1. Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic significance. Bioethical aspects of environmental impact on a person.	Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic significance. Bioethical aspects of environmental impact on a person.	1,5	-	-	
	Methods of hygienic research.	-	1	-	
2	Topic 2. Scientific bases of hygienic norm-setting. Hygienic regulation of chemicals in the atmosphere, air working area, water, soil and food products.	0,5 -	-	4	
3	Topic 3. History of the formation and development of hygiene. Modern period of development of hygiene.	-	-	3	
4	Topic 4. Hygienic value of solar radiation.	1	-	-	
	Methods of determining the intensity and prophylactic dose of ultraviolet (UV) radiation and its use for the purpose of disease prevention and sanitation of the air environment.	-	2	-	
5	Topic 5. Hygienic value of the components of the biosphere (atmosphere, hydrosphere, lithosphere).	-	-	3	
6	Topic 6. Hygienic value of the climate, weather, their influence on the health of the population.	1	-	-	
	Method of hygienic estimation of the influence of climate-weather conditions on human health. Prevention of meteorotropic reactions.	-	-	3	
7	Topic 7. Hygiene of populated places. Problems of urbanization. Hygiene Housing.	1	-	-	
	Method of determination and hygienic estimation of temperature, humidity, air velocity and their influence on heat exchange. Barometric pressure research.	-	1	-	
	Methods of determination and hygienic assessment of natural and artificial lighting of premises.	-	2	-	
	Methods of determining the concentration of CO <sub>2</sub> and air oxidation as indicators of anthropogenic air pollution and ventilation of premises.	-	2	-	
	Hygienic estimation of complex influence of microclimate parameters on human heat exchange.	-	2	-	
8	Topic 8. Hygiene of water and water supply.	0,5	-	-	
	Sources and types of water supply. Methodology of sanitary survey of water supply sources and water sampling for bacteriological and sanitary-chemical research.	-	-	3	
	Method of estimation of drinking water by the results of laboratory analysis of samples.	-	2	-	
	Endemic goiter as a hygienic problem, its etiology, prevention. Endemic fluorosis and caries	-	-	4	

	as a hygienic problem, their prophylaxis.				
	Methods and means of purification, disinfection of water with centralized and decentralized water supply.	-	4	-	
9	Topic 9. Hygiene of the soil and cleaning of populated areas.	0,5	-	-	
	Method of hygienic assessment of the soil according to the data of the sanitary inspection of the site and the results of laboratory analysis of samples.	-	2	-	
	Sanitary cleaning of populated areas.	-	-	3	
10	Topic 10. Nutrition as a health factor. Scientific fundamentals of rational nutrition. Biosafety issues in food hygiene.	1	-	-	
	Features of nutrition of people of different age groups, professions.	0,5	-	-	
	Method of calculation of energy consumption of man and his needs in nutrients. An assessment of the adequacy of food on the menu-layout.	-	4	-	
11	Topic 11. Methodology of studying and assessing the human nutritional status and medical control of providing the body with vitamins.	-	4	-	
	Prevention of alimentary and alimentary-induced diseases.	-	-	4	
12	Topic 12. Physiological and hygienic value of nutrients. Nutritional and biological value of food products.	0,5	-	4	
	Prevention of food poisoning		4		
	Hygienic evaluation of food products and prepared dishes based on their laboratory analysis.	-	2	-	
	Methods of preservation of food products, their hygienic characteristics. Nutritional supplements, their hygienic characteristics.	-	-	4	
<b>Together for the content modules 1</b>		<b>8</b>	<b>32</b>	<b>35</b>	
<b>Final control</b>		<b>Credit</b>			
<b>Content module 2. Special questions of hygiene and ecology</b>					
13	Topic 13. Actual issues of hygiene of children and adolescents. Bioethics and biosafety issues in children and adolescents' hygiene.	2	-	-	
	Methodology for assessing the state of health and physical development of children and adolescents.	-	2	-	
	Methods of research and assessment of environmental factors on the health of children and adolescents.	-	-	4	
14	Topic 14. Hygienic assessment of the regime of the day and educational process of children of different age groups.	-	2	-	
15	Topic 15. Methodology of hygienic assessment of planning, equipment and maintenance of children's preschool institutions, educational institutions for children and adolescents.	-	2	-	
16	Topic 16. Method of hygienic control over the organization of physical education and labor	-	-	4	

	training for children and adolescents. Medical-professional counseling and medical professional selection of adolescents in school and outpatient clinics.				
17	Topic 17. Current issues of occupational health. Biosafety in hygiene of work. Occupational health of doctors of different specialties.	2	-	-	
	Method of hygienic assessment of the severity and intensity of labor in order to prevent overwork and increase work capacity. Hygienic requirements to the working regime.	-	2	-	
18	Topic 18. Methods of hygienic assessment of hazardous and harmful factors of the production environment and the reaction of the organism to their influence. Production dust, impact on the body, prevention of dust pathology. Occupational toxicology. Bioethics and biosafety issues in occupational health.	-	4	-	
	Method of hygienic assessment of physical factors of the production environment.	-	2	-	
	Features of occupational hygiene in various industries and agriculture.	-	-	4	
	Pesticides, agrochemicals and biosecurity of the population.	-	-	5	
19	Topic 19. Hygiene of medical and preventive establishments and prevention of infections related to the provision of medical care. Safety issues in the activity of medical and preventive institutions.	2	-	-	
	Hygienic assessment of placement and planning of separate structural subdivisions of the hospital on the project materials.	-	2	-	
	Sources of environmental pollution by medical and pharmaceutical waste, ways of their disposal.	-	-	5	
20	Topic 20. Features of planning and arrangement of specialized hospitals and offices.	-	4	-	
21	Topic 21. Hygienic estimation of conditions of staying of patients and occupational health of medical workers in medical and preventive establishments. Prevention of infections related to the provision of medical care.	-	4	-	
22	Topic 22. Primary HIV prevention.	-	-	4	
23	Topic 23. Hygienic bases of medical and preventive nutrition. Catering in hospitals.	2	4	-	
	Curative properties of food products.	-	-	4	
24	Topic 24. Topical issues of radiation hygiene. Questions of bioethics and biosecurity in the application of ionizing radiation.	2	-	-	
	Radiation pollution of the environment. Hygienic aspects of the Chernobyl accident.	-	-	4	
25	Topic 25. Methods and means of radiation control and radiation protection of personnel and radiation safety of the population when using ionizing radiation in production, scientific	-	2	-	

	research, medical institutions. Estimated methods for assessing radiation safety and parameters of protection against external irradiation.				
26	Topic 26. Hygienic assessment of radiation protection personnel and radiation safety of patients in the application of radionuclides and other sources of ionizing radiation in hospitals.	-	2	-	
27	Topic 27. The main sources, ways, extent of pollution of the environment. Natural and man-made disasters. Organization of sanitary and hygienic measures in emergency situations.	-	-	5	
28	Topic 28. General patterns of human adaptation to different environmental conditions. Ecologically conditioned and environmentally dependent diseases.	-	-	4	
29	Topic 29. Methodological and methodological bases for studying health depending on the state of the environment.	-	-	4	
30	Topic 30. Healthy lifestyle and personal hygiene. Hygiene clothing and footwear. Prevention of bad habits.	2	-	-	
	Hygienic evaluation of detergents, fabrics and household, industrial and hospital clothes	-	2	-	
	Healthy lifestyle and personal hygiene. Hygienic assessment of baths, their influence on health.	-	-	4	
	Prevention of alcoholism, drug addiction, substance abuse, tobacco smoke.	-	-	4	
31	Topic 31. Psychohygienic basis of everyday human activities.	-	2	-	
32	Topic 32. Scientific Fundamentals of Medical Biorhythmology and Chronohygiene.	-	2	-	
<b>Together for the content modules 2</b>		<b>12</b>	<b>38</b>	<b>55</b>	
<b>Total hours 180 / 6.0 credits ESTS</b>		<b>20</b>	<b>70</b>	<b>90</b>	
<b>Final control</b>		<b>Exam</b>			



#### 4. Plan of lectures on "Hygiene and Ecology"

№	Topic	Number of hours
<b><i>Content module 1. General questions of hygiene and ecology</i></b>		
1	Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic significance. Bioethical aspects of environmental impact on a person. Scientific fundamentals of hygienic regulation.	2
2.	Solar radiation is its hygienic value. Weather and climate hygiene Acclimatization, helio-meteotropic reactions and their prophylaxis	2
3.	Hygiene of populated places. Problems of urbanization. Hygiene Housing. Water as a health factor, its hygienic and epidemiological significance. Organization of drinking water supply. Soil and health.	2
4.	Nutrition as a health factor. Scientific fundamentals of rational nutrition. Features of nutrition of people of different age groups, professions. Biosafety issues in food hygiene.	2
<b>Total</b>		<b>8</b>
<b><i>Content module 2. Special questions of hygiene and ecology</i></b>		
1	Topical issues of hygiene of children and adolescents. Bioethics and biosafety issues in children and adolescents' hygiene.	2
2	Topical issues of occupational hygiene, biosafety in occupational health. Hygiene is the work of doctors of various specialties.	2
3	Hygiene of medical and prophylactic establishments and prevention of nosocomial infections. The issue of safety in the activities of treatment and prevention institutions.	2
4	Hygienic bases of medical and preventive nutrition.	2
5	Topical issues of radiation hygiene. Questions of bioethics and biosecurity in the application of ionizing radiation.	2
6	Healthy lifestyle and personal hygiene. Hygiene clothing and footwear. Prevention of bad habits.	2
<b>Total</b>		<b>12</b>
<b>Number of hours of lectures on discipline</b>		<b>20</b>

#### 5. Plan of practical lessons on "Hygiene and Ecology"

№	Topic	Number of hours
<b><i>Content module 1. General questions of hygiene and ecology</i></b>		
1	Methods of hygienic research. Method of determination and hygienic estimation of temperature, humidity, air velocity and their influence on heat exchange. Barometric pressure research.	2
2	Methods of determination the intensity and prophylactic dose of ultraviolet (UV) radiation and its use for the purpose of disease prevention and sanitation of the air environment.	2
3	Methods of determination and hygienic assessment of natural and artificial lighting of premises.	2
4	Methods of determining the concentration of CO <sub>2</sub> and air oxidation as indicators of anthropogenic air pollution and ventilation of premises.	2
5	Hygienic estimation of complex influence of microclimate parameters on human heat exchange.	2
6	Method of estimation of drinking water by the results of laboratory analysis of samples.	2
7	Methods and means of purification, disinfection of water with centralized and	4

	decentralized water supply.	
8	Method of hygienic assessment of the soil according to the data of the sanitary inspection of the site and the results of laboratory analysis of samples.	2
9	Method of calculation of energy consumption of man and his needs in nutrients. An assessment of the adequacy of food on the menu-layout.	4
10	Method of studying and assessing the human nutritional status and medical control over the provision of the body with vitamins.	4
11	Hygienic evaluation of food products and prepared dishes based on their laboratory analysis.	2
12	Prevention of food poisoning.	4
<b>TOTAL</b>		<b>32</b>
<b><i>Content module 2. Special questions of hygiene and ecology</i></b>		
1	Method of estimation of the state of health and physical development of children and adolescents.	2
2	Hygienic assessment of the regime of the day and educational process of children of different age groups.	2
3	Method of hygienic assessment of planning, equipment and maintenance of children's preschool institutions, educational institutions for children and adolescents.	2
4	Method of hygienic estimation of intensity and tension of labour with the purpose of prophylaxis of overstrain and increase of capacity. Hygienic requirements to the mode of labour.	2
5	Method of hygienic estimation of dangerous and harmful factors of the production environment and reaction of organism on their influence. Industrial dust, effects on the organism, prevention of dust pathology. Occupational toxicology. Bioethics and biosafety issues in occupational health.	4
6	Method of hygienic assessment of physical factors of the production environment.	2
7	Hygienic assessment of placement and planning of separate structural subdivisions of the hospital on the project materials.	2
8	Features of planning and arrangement of specialized hospitals and their departments.	4
9	Hygienic estimation of conditions of staying of patients and occupational health of medical workers in medical and preventive establishments. Prevention of infections associated with medical care..	4
10	Hygienic bases of dietary (clinical) nutrition. Organization of nutrition in medical establishments..	4
11	Method and means of radioactive monitoring and antiradiation defence and radiation safety of population while using the ionizing irradiation in industry, research, medical establishments. Calculating methods of radiation safety assessment and defense parameters from external irradiation.	2
12	Hygienic assessment of antiradiation defence of medical personnel and radiation safety of patients while using the radionuclides and their ionizing irradiation sources.	2
13	Hygienic estimation of washing agents, fabrics, everyday, working and hospital clothes.	2
14	Psycho-hygienic bases of human everyday activity.	2
15	Scientific bases of modern biorythmology and chronohygiene.	2
<b>Total</b>		<b>38</b>
<b><i>The number of hours of practical lessons on discipline</i></b>		<b>70</b>

### 6. Plan of self educational work on "Hygiene and Ecology"

Number	Topic	Number of hours	Type of control
<b><i>Semantic module 1. General hygiene and ecology</i></b>			
1	History of the formation and development of hygiene. Modern period of development of hygiene.	3	Control on the

			exam
2	Hygienic regulation of chemicals in the atmosphere, air working area, water bodies, soil and food products.	4	- // -
3	Hygienic value of the components of the biosphere (atmosphere, hydrosphere, lithosphere).	3	- // -
4	Method of hygienic estimation of the influence of climate-weather conditions on human health. Prevention of meteorotropic reactions.	3	- // -
5	Sources and types of water supply. Methodology of sanitary survey of water supply sources and water sampling for bacteriological and sanitary-chemical research.	3	- // -
6	Endemic goiter as a hygienic problem, its etiology, prevention. Endemic fluorosis and caries as a hygienic problem, their prophylaxis.	4	- // -
7	Sanitary cleaning of populated areas.	3	- // -
8	Prevention of alimentary and alimentary-induced diseases.	4	- // -.
9	Physiological and hygienic value of nutrients. Nutritional and biological value of food products.	4	- // -
10	Methods of preservation of food products, their hygienic characteristics. Nutritional supplements, their hygienic characteristics.	4	- // -
<b>Total</b>		<b>35</b>	
<b><i>Content module 2. Special questions of hygiene and ecology</i></b>			
1	Methods of research and assessment of environmental factors on the health of children and adolescents.	4	Control on the exam
2	Method of hygienic control of the organization of physical education and labour training of children and adolescents. Medical and occupational consultation and occupational selection of teenagers in the conditions of school and polyclinic	4	- // -
3	Features of hygiene of labour in main branches of industry and agriculture.	4	- // -
4	Pesticides, agrochemicals and biosafety of the population.	5	- // -
5	Sources of environmental pollution by medical and pharmaceutical waste, ways of their disposal.	5	- // -
6	Primary prophylaxes of AIDS.	4	- // -
7	Curative and preventive abilities of food products	4	- // -
8	Radiation contamination of environment. Hygienic aspects of Chernobyl disaster.	4	- // -
9	General patterns of human adaptation to different environmental conditions. Ecologically conditioned and environmentally dependent diseases.	4	- // -
10	Methodological and methodological basis for the study of health depending on the state of the environment.	4	- // -
11	Natural and man-made disasters. Organization of sanitary and hygienic measures in emergency situations.	4	- // -
12	Healthy lifestyle and personal hygiene. Hygienic assessment of baths, their influence on health.	4	- // -
13	Prophylaxis of alcoholism, drug addiction, toxicomania, tobacco smoking.	5	- // -
<b>TOTAL independent work on discipline</b>		<b>55</b>	

7. **Individual tasks** on the subject "Hygiene and Environment" is not provided .

8. **Teaching methods** .In the educational process in teaching discipline "Hygiene and Environment" uses traditional teaching methods: verbal methods; visual; practical. Methods of teaching and learning activities: explanatory, illustrative method, the problem of presentation , scientific search method, research method.

Methods of motivation and teaching and learning activities, incentives and motivation training, and self-control methods as teaching methods.

Control methods of stimulating and motivating teaching and learning of students as learning methods (control of the teacher, self-control, mutual, self-correction, each-other correction, correction and integrated methods).

**9. Control methods.** Methods of monitoring and evaluation system implemented according to the requirements of the program instructions on discipline and evaluation of educational activities of students in the implementation of the European credit transfer system to learn, approved by Ministry of Health of Ukraine 15.04.2014.

*Types of control* - current and final.

Current control is carried out in the course of studying a specific topic to determine the level of formation of individual skills or skills, the quality of assimilation of a specific portion of the educational material. In assessing the educational activities of students, the advantage of standardized methods of control: testing, structured writing works, structured according to the procedure for controlling practical skills in conditions that are close to real.

#### **Criteria for evaluation of current educational activity of students**

The aggregate of knowledge, skills, skills, and other competences acquired by a higher education student in the process of studying on each subject of the discipline "Hygiene and Environment" is evaluated according to the following criteria:

- **5 / "excellent"** - the student flawlessly mastered the theoretical material, demonstrates profound and comprehensive knowledge of the relevant topic, the main provisions of scientific sources and recommended literature, logically thinks and builds the answer, freely uses the acquired theoretical knowledge in the analysis of practical material, expresses his attitude to those or other problems, demonstrates a high level of mastering of practical skills;

- **4 / "good"** - the student has well mastered the theoretical material, possesses the main aspects from the primary sources and the recommended literature, reasonably teaches it; has practical skills, expresses his thoughts on certain problems, but some inaccuracies and errors are assumed in the logic of presentation of theoretical content or in the analysis of practical;

- **3 / "satisfactory"** - the student has mastered the theoretical knowledge of the educational subject or discipline, is oriented in the primary sources and recommended literature, but is unconvincingly responsible, confused with the concept, additional questions cause the student insecurity or lack of stable knowledge; answering questions of a practical nature, reveals inaccuracies in knowledge, does not know how to evaluate facts and phenomena, associate them with future activities, suppose mistakes in the implementation of practical skills;

- **2 / "unsatisfactory"** - the student has not mastered the educational material of the topic, does not know the scientific facts, definitions, is almost not oriented in the primary sources and recommended literature, there is no scientific thinking, practical skills are not formed.

Final control - the exam is carried out after the completion of the study of the discipline in the IV semester.

Semester final examinations - credits (III semester) and exam (IV semester) are allowed for students who completed all types of work, tasks provided for by the curriculum for the semester in the discipline "Hygiene and Ecology", visited all the training sessions envisaged by the program and scored for the current achievement of the number of points, not less than the minimum - 72.

**10. Current control** is carried out during practical classes and is aimed at verifying students' acquisition of educational material.

*10.1. Assessment of current training activities.* When evaluating the mastering of each topic for the current educational activity, the student is presented with grades in the 4-point ballroom (national). It takes into account all types of work provided for by the discipline program. A student should receive an assessment from each topic for further conversion of marks into points on a multi-point (200-point) scale.

#### **11. Form of the final control of the success of the training - exam.**

The semester exam is a form of final control of the student's acquisition of theoretical and practical material from the discipline.

#### **12. Scheme of accrual and distribution of scores received by students:**

The maximum number of points a student can score for the current academic activity for admission to the exam is 120 points.

The minimum number of points that a student must score for the current training for admission to the exam is 72 points.

The calculation of the number of points is made on the basis of the student's assessment of the 4-point (national) scale during the study of discipline, by calculating the arithmetic mean (CA) rounded up to two decimal places. The resulting value is converted to a score on a 200-point scale in the following way:

$$\bullet X = CA \cdot 120 / 5$$

**Recalculation of the average score for current activities multimark scale  
(Total control - exam)**

For convenience, a table converted 200-point scale:

4 point scale	200 -point scale	4 point scale	200 point scale	4 point scale	200 point scale	4 point scale	200 point scale
5	120	4.45	107	3.91	94	3.37	81
4.95	119	4.41	106	3.87	93	3.33	80
4.91	118	4.37	105	3.83	92	3.29	79
4.87	117	4.33	104	3.79	91	3.25	78
4.83	116	4.29	103	3.75	90	3.2	77
4.79	115	4.25	102	3.7	89	3.16	76
4.75	114	4.2	101	3.66	88	3.12	75
4.7	113	4.16	100	3.62	87	3.08	74
4.66	112	4.12	99	3.58	86	3.04	73
4.62	111	4.08	98	3.54	85	3.00	72
4.58	110	4.04	97	3.49	84	Less than 3	Not enough
4.54	109	3.99	96	3.45	83		
4.5	108	3.95	95	3.41	82		

*Independent work of students* is evaluated during the current control of theme on the proper lesson. Learning topics submitted only on independent work is controlled at the final control.

**The maximum number of points** that a student can collect in the preparation of the exam is 80.

**The minimum score** in the preparation of the exam - at least 50 .

**Assessment of discipline**, culminating exam is defined as the sum of scores for the current educational activity (at least 72) and points per exam (at least 50).

Points are converted regardless of discipline both in ECTS scale, and a 4-point (national) scale. Score ECTS scale 4-point scale is not converted and vice versa.

Scores of students are enrolled in one specialty, taking into account the number of points gained in the discipline ranked on a ECTS scale as follows:

Assessment ECTS	statistic
A	Top 10% of students
B	Next 25% of students
C	Next 30% of students
D	Next 25% of students
E	The last 10% of students

Ranking by assigning ratings of "A", "B", "C", "D", "E" is held for the students of this course, studying at one of the specialty and successfully completed the study subjects. Students who have received assessment FX, F («2») are not made to the list of students who ranked. Students with an estimate FX after retaking automatically receive a score of "E".

Scores of discipline for students who successfully completed the program, converted into traditional 4-point scale for absolute criteria listed in the table below:

Scores on discipline	Score 4-point scale
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From 170 to 200 points	5
From 140 to 169 points	4
From 139 points to the minimum number of points that a student must score	3
Below the minimum number of points that a student must collect	2

Assessment ECTS in traditional scale is not converted because the scale of ECTS and independent four-point scale.

Objectivity evaluation of educational activities of students tested statistical methods (correlation coefficient between the assessment ECTS and evaluation on a national scale).

### 13. Methodological Support

- Branch standards of higher education training at the second (masters) level Magistracy in the knowledge field of 22 Health care, 222 specialty "Medicine", 2016
- Syllabus of the course.
- Proceedings of lectures.
- Methods of lectures.
- Guidelines for teachers to every second of topics and workshops.
- Guidelines for students to every second of topics and workshops.
- Guidelines for independent work.
- Test and control tasks for workshops.
- Situational tasks to the topic workshops and independent work.
- The list of questions and practical skills to final control.
- regulatory legislative documents.
- Demonstration materials, instructions for use of teaching aids (devices and equipment).

### 14. Recommended References

#### Principal:

1. Hygiene and Ecology. Textbook. / Edited by V.G. Bardov. - Vinnytsa: Nova Knyha, 2018 - 688 p.
2. Hygiene and Ecology. Textbook. / Edited by V.G. Bardov. - Vinnytsa: Nova Knyha, 2009 - 688 p.
3. Hygiene and ecology. Student's text-book, 4 modules, 38 chapters. Vladimir A. Korobchanskiy, Michael P. Vorontsov, Alisa A. Mususlbas. Kontrast Publishing Enterprise, Kharkov, 2006. – 207 p.

#### Additional:

1. Hygiene and Ecology. Textbook. / Edited by V.G. Bardov. - Vinnytsa: Nova Knyha, 2009.
2. Загальна гігієна: Посібник для практичних занять / За загальною ред. Даценко І.І. – Львів, 2001. – 472 с.: іл.
3. Загальна гігієна. Словник-довідник // І.І. Даценко, В.Г. Бардов, Г.П. Степаненко. – Львів, 2001. – 244 с.
4. Комунальна гігієна // Є.Г. Гончарук, В.Г. Бардов, С.І. Гаркавий, О.П. Яворовський та ін.; за ред. Є.Г. Гончарука. – К.: Здоров'я, 2003. – 728 с.
5. Гігієна харчування з основами нутриціології (за ред. В.І. Ципріяна). – К., 2008. – 568 с.
6. Гігієна праці (під ред. А.М. Шевченка, О.П. Яворовського). – Вінниця: Нова Книга, 2005. – 520 с.
7. Норми радіаційної безпеки України (НРБУ-97). – К., 1997. – 121 с.
8. Основні санітарні правила протирадіаційного захисту України (ОСПУ-2005). – 136 с.

### 15. Information Resources

Official web-resources of the President of Ukraine, Verkhovna Rada of Ukraine, Ministry of Education, Ministry of Health and other central authorities of Ukraine, Danylo Galycky Lviv National Medical University Web resource (<http://meduniv.lviv.ua>), Lviv National Medical Danylo Galycky University General Hygiene Department website, educational portals in higher education in Ukraine.