

DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY

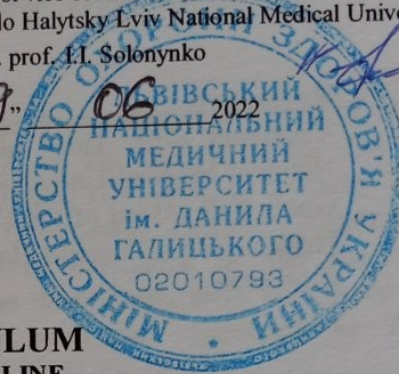
Department of general hygiene with ecology

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

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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 221 "Dentistry"**

APPROVED
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 the department

professor V.I. Fedorenko

APPROVED
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

PROGRAMMERS:

Fedorenko V.I., Head of the Department of General Hygiene with Ecology of Danylo Halytsky Lviv National Medical University, MD, D.Med.Sc., Professor

Kitsula L.M., Associate Professor of the Department of General Hygiene with Ecology of Danylo Halytsky Lviv National Medical University, MD, PhD

REVIEWERS:

Vynograd N.O., Head of the Department of Epidemiology of Danylo Halytsky Lviv National Medical University, D.Med.Sc., Professor

Gutor T.G., Head of the Department of Social Medicine, Economics and Organization of Health Care of Danylo Halytsky Lviv National Medical University, MD, PhD, Associate Professor

INTRODUCTION

The Curriculum of “Hygiene and Ecology”

is prepared in accordance with the Educational program of Dentistry of the *second (master’s) level* area of knowledge 22 “*Health*” specialty 221 “*Dental studies*”

Course description (abstract)

The program on Hygiene and Ecology was drawn up in pursuance of Order N 883 dated March 15, 2022 “On the implementation of the curriculum for the training of specialists of the second (master’s) level of higher education in specialty 221 Dental studies” in accordance with the Educational Professional Program “Dentistry” of the second level of higher education, and also in pursuance of the requirements of “Regulations on the working curriculum of the discipline”, were developed at Danylo Halytsky Lviv National Medical University and were approved by the Central Methodological Commission (protocol N 2 dated April 23, 2015).

The discipline of “Hygiene and Ecology” for Masters of Dentistry is taught in the second year of study. 90 hours (3 credits) are given for its study, including 10 hours of lectures, 30 hours of practical classes and 50 hours for self-reliant study (SRS).

Dental care is one of the most common types of medical care. This is evidenced by the fact that appeals to dentists are second after appeals to physicians and account for more than a quarter of total patient appeals to all doctors.

Specificity and prevalence of dental services on a budget and private basis, their differentiation by age (children, adults) and place of residence (city, village), narrow specialization (dentist-therapist, dentist-surgeon, dentist-orthopedist, dentist-orthodontist, periodontist, etc.) necessitate the creation of appropriate technical, technological and hygienic conditions for their implementation, which requires mastering the knowledge of fundamental knowledge in the field of hygiene and ecology, taking into account elements of bioethics and nooethics in their future practice, familiarization with sanitary and hygienic requirements for dental offices of various profiles, means of prevention of healthcare-associated infections (HAIs), prevention of adverse effects of harmful factors on the health of staff and patients.

Hygiene and ecology as a discipline:

- lays the foundations for students to study environmental factors and their impact on general and dental health;
- equips the dentist with practical skills to implement specific preventive measures regarding the observance of personal hygiene by a healthy and sick person, of hygiene of food, work, life, upbringing and education of children and adolescents, to maintain of

medical and preventive dental institutions in proper sanitary condition, to ensuring radiation safety of patients and staff of dental institutions, etc.;

- gives wide opportunities for the formation of preventive thinking in future dentists, equips them with fundamental theoretical knowledge and practical skills aimed at maintaining and strengthening general and dental health, prolonging creative longevity and life expectancy in general.

The current educational activities of students are monitored in practical classes in accordance with the specific objectives of the current topic. Assimilation of each topic is controlled at lessons (initial control - as the level of readiness for classes and final control - as the level of acquired knowledge and skills) by means of spoken or written interviews, solving situational tasks.

The structure of the discipline	Credits ECTS, amount of hours, including				Year of studying, semester	Type of control
	Total	Auditory lessons		Self-reliant study		
		Lectures (hours)	Practical classes (hours)			
Name of the discipline: Hygiene and Ecology <i>Thematic modules - 3</i>	3 credits / 90 hours	10	30	50	2nd year (III semester)	Exam

The subject of the study of the discipline “Hygiene and Ecology” is the influence of physical, chemical, biological and social factors of the environment on individual and public working conditions, education, rest, nutrition, life, including dental health; valid hygienic norms, rules and recommendations aimed at preserving and strengthening the health of the population.

Interdisciplinary connections: discipline “Hygiene and Ecology” is interdisciplinary relationships with the following disciplines: philosophy and bioethics, sociology and medical sociology, science, ethics, medical and biological physics, biology, microbiology virology and immunology, medical and general chemistry, Bioorganic and biological chemistry, physiology, pathological physiology, epidemiology, internal diseases, radiation medicine, medical law, life safety, labor protection in the industry.

1. The purpose and tasks of the discipline

1.1. **The purpose of studying** of the discipline “Hygiene and Ecology” is to preserve and strengthen the health of the individual, collective, population, society as a whole; according to E. Parks “to make the development of the human body the most perfect, life the strongest, death the most remote”.

1.2. **The main tasks of studying** of the discipline “Hygiene and Ecology” are:

- to interpret the basic laws of hygiene and general patterns of connection between the public health and factors / conditions of living environment;
- to interpret the impact of environmental factors on the general and dental health of adults and children;
- to master the methods of hygienic assessment of environmental factors and their impact on public health;
- to substantiate hygienic measures for the prevention of dental diseases in accordance with the basics of current legislation of Ukraine;
- to use the positive properties of environmental factors for primary, secondary, tertiary prevention of common diseases and diseases of the dental and maxillofacial system;
- to acquire knowledge about the negative factors of the environment, the ability to determine their relationship with health and develop preventive measures, including dental;
- to plan hygienic measures to prevent the spread of common and dental diseases, evaluate the effectiveness of these measures;
- to substantiate hygienic measures to maintain a healthy lifestyle, personal hygiene, occupational health, treatment and protection regime of dental institutions, to plan and implement them in healthcare practice;
- to master the basics of ethics, deontology, bioethics, use methods of psychohygiene and psychoprophylaxis in communication with patients and staff of medical institutions.

1.3. **Competencies and learning outcomes** facilitated by discipline.

In accordance with the requirements of the Higher Education Standard the discipline ensures that students acquire **competencies**:

- *integrated competence* - the ability to solve complex tasks and problems in the area of health care in the specialty “Dental studies” in professional activities or in the learning process, which provides research and / or innovation and implementation is characterized by complexity and uncertainty of conditions and requirements;
- *general competencies*:
 - ability to think abstractly, analyze and synthesize, to be able to learn and to be modernly taught;
 - knowledge and understanding of the subject area and understanding of the profession;
 - ability to apply knowledge in practical situations;
 - ability to communicate with the official language both spoken and writing forms; ability to communicate with another language;
 - skills of using information and communication technologies;
 - ability to choose a communication strategy; ability to work as a team; interpersonal skills;
 - skills of safe activity; ability to evaluate and ensure the quality of work performed;
 - desire to preserve health and the environment;
 - ability to act socially responsible and consciously;

- *special (professional, subject) competencies:*
- collection of medical information about the patient's condition; evaluation of the results of laboratory and instrumental research; establishing a clinical diagnosis of dental disease; assessment of the impact of the environment on individual, family, population health;
- planning and conducting measures for the prevention of dental diseases;
- determination of the necessary regime of work and rest, diet in the treatment of dental diseases;
- processing of state, social and medical information.

Detailing of competencies according to NQF descriptors is given in the form of the “Competence Matrix”.

Competence Matrix

N	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
Integrated competence					
The ability to solve complex tasks and problems in the area of health care in the specialty “Dental studies” in professional activities or in the learning process, which provides research and / or innovation and implementation is characterized by complexity and uncertainty of conditions and requirements					
General competencies					
1	Ability to think abstractly, analyze and synthesize, to be able to learn and to be modernly taught	To know the methods of analysis, synthesis and further modern learning	To be able to analyze information, make informed decisions, be able to acquire modern knowledge	Make the right connections to reach the goals	To be responsible for the timely acquisition of modern knowledge
2	Knowledge and understanding of the subject area and understanding of the profession	To have deep knowledge of the structure of professional activity	To be able to perform professional activities that require updating and integration of knowledge	Ability to effectively form communication strategy in professional activities	To be responsible for further professional development
3	Ability to apply knowledge in practical situations	To have specialized conceptual knowledge acquired in the learning process	To be able to solve complex tasks and problems during professional activity	Clear and unambiguous communication with specialists and non-specialists	To be responsible for making decisions under difficult circumstances
4	Ability to communicate with the official language both spoken and writing forms; ability to communicate with another language	To have perfect knowledge of the state language and basic knowledge of a foreign language	To be able to apply knowledge of the state language both spoken and written forms, be able to communicate with a foreign language	Use the state language in professional and business communication and in preparation of documents and a foreign language in practice	To be responsible for fluency in the state language and ability to communicate with a foreign language knowledge

N	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
5	Skills of using information and communication technologies	To have thorough knowledge of information and communication technologies used in professional activities	To be able to use information and communication technologies in the professional field that requires updating and integration of knowledge	Use information and communication technologies in your professional activity	To be responsible for the development of professional knowledge and skills
6	Ability to choose a communication strategy; ability to work as a team; interpersonal skills	To know the tactics and strategies of communication, the laws and methods of communicative behavior	To be able to choose ways and strategies of communication to ensure effective teamwork	Use strategies of communication and interpersonal skills	To be responsible for the choice and tactics of communication
7	Skills of safe activity; ability to evaluate and ensure the quality of work performed	To know the methods of organizing safe activities and assessing its quality indicators	To be able to organize safe and high-quality work	To establish links to ensure safe and quality work	To be responsible for safe and high-quality performance of works
8	Desire to preserve health and the environment	To know the main measures for preserving health and the environment	To be able to apply measures to protect health and the environment	To establish links to organize measures to protect health and the environment	To take responsibility for maintaining health and the environment
9	Ability to act socially responsible and consciously	To know the duties and ways to complete the tasks	To be able to set goals and tasks, be persistent and conscientious in the performance of duties	To establish interpersonal relationships to perform tasks and responsibilities effectively	To be responsible for the quality of the tasks
Special (professional, subject) competencies					
1	Collection of medical information about the patient's condition; evaluation of the results of laboratory and instrumental research; establishing a clinical diagnosis of dental disease; assessment of the impact of the environment on	To have specialized knowledge about the impact of environmental factors on health, know the principles of standard methods of research of environmental factors and their	To be able to analyze the role of environmental factors in the occurrence of dental pathology, the results of studies of environmental factors and their impact on health	To determine the links between the patient's condition and the impact of adverse environmental factors	To be responsible for proving the established connections

N	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
	individual, family, population health	impact on health			
2	Planning and conducting measures for the prevention of dental diseases	To know the measures of primary, secondary and tertiary prevention of major types of dental pathology	To be able to plan and organize measures of primary and secondary prevention of dental diseases	To establish interprofessional links for effective prevention of dental pathology	To be responsible for the effectiveness of the proposed preventive measures
3	Determination of the necessary regime of work and rest, diet in the treatment of dental diseases	To know the role of nutrition, work and rest for the prevention and treatment of dental diseases	To be able to apply nutrition, work and rest for the prevention and treatment of dental diseases	To be able to justify the importance of nutrition, work and recreation for patients	To be responsible for the effectiveness of the proposed preventive and curative measures
4	Processing of state, social and medical information	To know the ways of obtaining and methods of information processing	To be able to apply the ways of obtaining and methods of information processing	To be able to establish connections to obtain government, social and medical information	To be responsible for the effective processing of state, social and medical information

Learning outcomes:

Integrative final program learning outcomes, the formation of which is facilitated by the discipline:

- to establish a preliminary clinical diagnosis of dental disease by using preliminary data of the anamnesis and examination of the patient, knowledge about the person, his organs and systems;
- to collect information about the general condition of the patient; assess the physical and psychomotor development of the patient;
- to plan and implement measures for the prevention of dental diseases among the population to prevent the spread of dental diseases;
- to analyze the epidemiological situation and carry out measures of mass and individual, general and local drug and non-drug prevention of dental diseases;
- to determine the nature, principles of work, rest and the necessary diet in the treatment of dental diseases on the basis of clinical diagnosis by making an informed decision according to existing algorithms and standard schemes;
- to organize medical and evacuation measures among the population, servicemen, in case of emergency, including martial law, during the detailed stages of medical evacuation, taking into account the existing system of medical and evacuation support;
- to analyze and evaluate state, social and medical information using standard approaches and computer information technologies;

- to assess the impact of the environment on the health of the population in a medical institution according to standard methods;
- to determine the goals and structure of personal activities based on the results of the analysis of certain social and personal needs;
- adhere to a healthy lifestyle, use the techniques of self-regulation and self-control;
- adhere to the requirements of ethics, bioethics and deontology in their professional activities;
- to organize the necessary level of individual safety (own and persons cared for) in case of typical dangerous situations in the individual field of activity.

Learning outcomes for the disciplines: therapeutic dentistry, pediatric dentistry.

2. Information volume of the discipline

Three credits ECTS (90 hours) are given to study the discipline.

Thematic module 1. Hygienic value of the environment and methods of its hygienic researches

Specific goals

To understand the importance of knowledge of hygiene for the dentist and the priority of prevention over medical medicine.

To analyze the historical stages of the formation of hygiene as a branch of preventive medicine and the contribution to its development of outstanding hygienists.

To master the laws and methodological foundations of hygiene, classification of methods of hygienic research, classification of environmental factors and the basic patterns of their impact on the human body and population health.

Get acquainted with the basics of sanitary legislation, methods and means of sanitary supervision.

To master the knowledge of the importance of the air, solar radiation, climate, weather as environmental factors.

To master the methods of using the positive properties of solar radiation, including ultraviolet radiation for health purposes and for disease prevention.

To master the principles and methods of optimizing the microclimate of residential, hospital, health facilities, dental clinics and offices.

To master the knowledge of methods and means of protection against chemical pollution of air and indoor air for various purposes.

To master the knowledge of the importance of water as an environmental factor.

To interpret the effects of drinking water on general and dental health. Identify risk factors for common diseases and major dental diseases associated with the use of poor quality drinking water.

To master the knowledge of the importance of soil as an environmental factor.

To interpret the impact of soil, its natural composition and contaminants on general and dental health.

Topic 1. Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic value. Bioethical aspects of environmental effect on a person.

Definition of hygiene, its purpose, tasks, content, connection with other sciences. The importance of knowledge of hygiene for the formation of professional consciousness and in the practice of dentists.

Health, definitions of individual theoretical, individual factual, personal, public health, indicators of public (population) health.

Prevention, its types (public and personal, primary, secondary and tertiary).

An empirical stage in the history of hygiene. Views of Hippocrates, Avicenna, Socrates on the role of prevention in maintaining and promoting health. Sanitary culture of Kievan Rus and Zaporizhzhya Sich. Scientific and experimental stage of hygiene development. The role of M. Pettenkofer, O.P. Dobroslavin, V.A. Subbotin in the formation of the scientific and experimental stage of hygiene. Development of hygienic science in Ukraine. The contribution of prominent scientists A.M Marzeev, L.I. Medvid, R.D. Gabovych, Ye.G. Goncharuk and others in the development of hygienic science.

Laws of hygiene, basic laws, methods and techniques of hygienic research. Classification of hygiene methods. Specific methods of hygienic research.

Sanitation as a field of practice in the health care system. Types of sanitation. The concept of sanitary supervision, its organization. State Service of Ukraine on Food Safety and Consumer Protection, main tasks. Laboratory centers and Centers for Disease Control and Prevention. Public Health Center of the Ministry of Health of Ukraine, main tasks. Relationship between sanitary-epidemiological and treatment-and-prophylactic services, their joint work in the area of preservation and strengthening of personal and public health.

Topic 2. Hygienic value of biosphere components (atmosphere, hydrosphere, lithosphere).

The biosphere, its structure, functional connections, the place of man in the biosphere. The teachings of V.I. Vernadsky about the noosphere. Functioning of the biosphere, the first and second laws of thermodynamics. Ecological systems. Biogeocenoses, biogeochemical cycles.

Environment, its elements. Influence of natural factors and social conditions of the human body and the population. Bioethical aspects of environmental impact on humans.

Hygienic value of the atmosphere, hydrosphere, lithosphere. Denaturation of the biosphere. Chemical and energy pollution. The main sources, types and consequences of anthropogenic pollution of air, water, soil. Greenhouse effect, smog, acid rain. Impact of air, water, soil pollution on the health and living conditions of the population. Direct effects of pollutants on the body: acute, chronic specific and nonspecific diseases of chemical etiology. Ecological situation in Ukraine. Regulatory bases of nature protection and environmental protection measures.

Topic 3. Methods of hygienic researches. Methods for determining the prophylactic dose of ultraviolet radiation and the use of ultraviolet radiation to prevent disease and to air sanitation.

Classification of methods of hygienic research. Methods of studying the state of the environment and its impact on human health. Epidemiological method, methods of laboratory and field experiments, sanitary-statistical methods and their use in the practice of dentistry.

Solar spectrum at the boundary between the atmosphere and the Earth's surface. Influence of solar activity on living organisms of the Earth. The impact of solar radiation on public health, including the development and condition of the dental and maxillofacial system.

Ultraviolet radiation of the Sun, its spectrum on the border with the atmosphere and on the Earth's surface, biogenic and abiogenic action, methods and devices for determining the intensity, use in medicine. The concept of erythema and prophylactic dose. Solar "starvation". Ultraviolet climate.

Artificial sources of ultraviolet radiation, their comparative hygienic characteristics. The use of natural and artificial ultraviolet radiation for the prevention of human diseases, including dental. Basic principles and methods of using artificial sources of ultraviolet radiation in health care facilities. Use of artificial sources of ultraviolet radiation for air remediation in separate offices of dental institutions, disinfection of dental instruments, photopolymer fillings, etc. Use of ultraviolet bactericidal radiation for air disinfection and disinfection of surfaces in the premises of health care facilities and institutions (Order of Healthcare Ministry of Ukraine N 882 dated May 06, 2021 "On approval of sanitary and antiepidemic rules and norms for using of ultraviolet bactericidal radiation for the air disinfection and disinfection of surfaces in the premises of health care institutions and institutions of social services / social protection").

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.

Topic 4. Methods of determination and hygienic assessment of natural and artificial lighting in premises of different functional purpose.

Visible radiation of the Sun, its spectrum, hygienic value. Influence of lighting on the functions of vision, the state of the central nervous system, efficiency, in particular dentists. Prevention of adverse effects of insufficient and excessive lighting on human health and ability to work.

Hygienic value of natural lighting of premises for various purposes (residential, educational, industrial, hospital and others). External and internal factors that affect the level of natural light in the premises. Methods for assessing natural lighting; geometric, lighting methods for assessing the natural light of the premises. Hygienic requirements for natural lighting.

Hygienic value of artificial lighting. Methods of hygienic assessment of artificial lighting of premises for various purposes, including dental institutions; its indicators, evaluation of results. Hygienic characteristics of artificial light sources. Types and systems of artificial lighting. Lighting fixtures and their hygienic assessment.

Topic 5. Microclimate, its hygienic value. Methods of determination and hygienic assessment of temperature, humidity, air velocity and radiation temperature. Hygienic value of the direction of air movement.

Hygienic value of physical properties of the air (temperature, humidity and air velocity). The concept of microclimate. Influence of uncomfortable (cool and heat) microclimate on human heat exchange and health. Physiological mechanisms of heat exchange and thermoregulation as factors of thermostat of warm-blooded organisms: heat production and heat transfer. Ways of heat transfer: through respiration, through the skin, with secretions. Chemical mechanisms of heat production and physical mechanisms of heat transfer: radiation, conduction (convection and conduction), evaporation. Physiological changes in the mechanisms of thermoregulation in heating and cooling microclimate.

Methods for determining and hygienic assessment of temperature, humidity, air velocity and radiation temperature. Devices for measuring air temperature, radiation temperature, humidity and air velocity, rules for working with them.

Methods and indicators for assessing the complex effects of the microclimate on the human body (physical modeling, effective-equivalent temperatures, the resultant temperatures, etc.).

Bioethical problems of maintaining the microclimate of residential and public premises.

Hygienic value of the direction of air movement. Wind rose, methods of its construction and use for hygienic purposes.

Topic 6. Methods of hygienic assessment of climatic and weather conditions, their impact on human health. Acclimatization. Sanitary protection and biosafety of atmospheric air.

Atmosphere, its structure and properties. Natural chemical composition of atmospheric air and hygienic value of its separate components. Atmospheric air pollution, main sources, types and consequences. Impact of polluted air on the health and living conditions of the population. Sanitary protection and biosafety of atmospheric air. Atmospheric pressure and its effect on the body.

Climate, definition. Factors that shape and characterize the climate, their indicators. General and applied (medical, construction) climate classifications. Climatic zones of Ukraine. Climate, health and efficiency. Acclimatization as a complex socio-hygienic process, climatotherapy and spa therapy.

Weather, definition. Weather formation. Factors that shape and characterize the weather. Types of atmospheric circulation, the main thermobaric formations: anticyclones, cyclones, atmospheric fronts. Medical weather classifications. Direct and indirect effects of weather on human health. Methods of

hygienic assessment of the impact of climate and weather on human health. Helioetotropic reactions of healthy and sick people.

Topic 7. Hygienic significance of air environment of premises, its hygienic evaluation (determining of CO₂ concentration, oxidability index, dust, chemical and bacteriological contamination).

The main sources of air pollution in the premises of communal, public, industrial purposes. Criteria and indicators of the air pollution (physical, chemical, bacteriological).

Sources of the air pollution in residential premises and individual premises of treatment and prevention facilities (dental offices, dental laboratories, etc.).

Air oxidation and carbon dioxide as sensitive indirect indicators of anthropogenic air pollution. The effect of different concentrations of carbon dioxide on the body.

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

Industrial dust, its classification, prevention of harmful effects. Industrial toxicology. Combined, complex, combined action of industrial hazards.

Biological factors in production, prevention of their adverse effects.

Indoor air amplification systems. Natural and artificial ventilation. Hygienic value of room ventilation. Types, classification of ventilation of communal and industrial premises. Ventilation efficiency indicators. Necessary and actual volume and frequency of ventilation, methods of their determination.

Air conditioning. Principles of construction of air conditioners.

Topic 8. Hygiene of inhabited places, its bioethical issues. Hygiene of water and water supply. Effect of water quality on general and dental health of population.

Living conditions in human settlements and human health. Features of the formation of the urban environment and hygienic aspects of life in the modern city. Urbanization as a socio-hygienic problem. Planning and construction of the settlement.

Water as an environmental factor, hygienic value. Norms of water consumption depending on the level of communal and sanitary improvement of the settlement, living conditions and human activities. Physiological, household, endemic, epidemiological, toxicological, balneological, economic significance of water. Impact of drinking water quality on general and dental health.

Sources of water supply, their comparative hygienic characteristics.

State standard of water quality of sources of centralized domestic and drinking water supply. Scientific substantiation of drinking water quality standards of centralized water supply systems. Water purification methods: general (settling, filtration, coagulation) and special (fluoridation, defluoridation, deironing, softening, demineralization, deodorization, etc.). Methods of water disinfection: physical and chemical.

Sanitary supervision of water supply of populated cities. Sanitary protection zones of centralized water supply sources.

Topic 9. Methods of hygienic assessment of drinking water. Endemic fluorosis and caries as hygienic problems, their prevention.

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

Influence of organoleptic properties of drinking water on the level of water consumption and the state of sanitary culture of the population.

The role of water and water supply conditions in the spread of infectious diseases. Infectious diseases caused by water (cholera, typhoid fever, dysentery, etc.). The role of sanitary-indicative microorganisms for assessing the quality of drinking water by bacterial composition.

Water as an etiological factor of diseases of non-infectious nature, including disorders of the formation and condition of the dental and maxillofacial apparatus. Caries and endemic fluorosis as a hygienic problem, their prevention. Hygienic value of fluoride, the impact of insufficient content of it and some other trace elements in water on the occurrence of caries, endemic goiter and other diseases. Danger of excessive content in water of various chemicals of natural origin and chemical compounds of man-made origin for human health. Endemic fluorosis, its stages, water-nitrate methemoglobinemia. Methods for determining the fluorine content in drinking water, evaluation of the obtained data. Organization and joint study by hygienists and dentists of the effectiveness of water fluoridation for the prevention of dental caries, water defluoridation for the prevention of dental fluorosis and correction of fluoride dose in it.

Methods of purification and disinfection of drinking water.

Topic 10. Hygienic evaluation of sanitary condition of the soil. Modern hygienic and bioethical problems of sanitary purification of settlements.

Soil, definition. Mechanical structure, physical properties and chemical composition of soil. Soil classification. Hygienic assessment of different types of soils. Indicators that characterize the physical properties of the soil. Processes and indicators of soil self-cleaning. Assessment of soil sanitary condition by chemical and biological indicators.

Sources of soil pollution in modern conditions of industrialization and chemicalization of the national economy. Impact of soil pollution on the health and sanitation of the population. The role of soil in the occurrence and spread of infectious diseases and invasions, diseases of non-infectious etiology, principles of prevention. Biogeochemical provinces and endemic diseases.

Principles of cleaning settlements. Systems and facilities for temporary storage, disposal, disposal and utilization of solid waste. Modern methods of solid waste disposal and utilization (processing and utilization plants, improved landfills, composting methods, biothermal chambers, etc.).

Liquid waste, their classification and sanitary-epidemiological significance. Sewerage of settlements, its importance in the prevention of infectious diseases. Influence of sewerage of settlements on sanitary condition of soil and living conditions of the population. Methods and facilities for treatment and disinfection of liquid domestic wastewater (large cities, individual facilities, including treatment and prevention and sanatorium).

Hospital waste, its disinfection and disposal.

Thematic module 2. Hygienic principles of nutrition, hygiene of children and adolescents

Specific objectives

To master the knowledge of the role of nutrition as an important factor in the processes of growth, development of the body, prevention of aging, preservation and promotion of general and dental health, preservation of efficiency, resistance to adverse environmental factors.

To interpret the impact of nutrition on general and dental health.

To master the knowledge of nutrition, its basic principles, organization and control.

To master the knowledge of the role of individual nutrients, composition and properties of food.

To determine, assess the nutritional status of a person, diagnose nutritional diseases, determine the causes of status disorders, establish links with dental diseases.

To recognize infectious diseases of food origin and food poisoning, interpret the functional responsibilities of general practitioners in their investigation and prevention.

To interpret the age and sex characteristics of the structure and physiological state of the organism.

To determine the impact of environmental factors and social conditions on the development and health of the child.

To master the knowledge of the laws of physical and psychophysiological development of children and adolescents, to be able to organize dental health activities in the conditions of education, training of children in the family and children's groups.

To master the methods of comprehensive assessment of the general and dental health of children and adolescents and the factors which affect it, methods of prevention of childhood diseases of infectious and non-infectious etiology.

Get acquainted with the hygienic requirements for planning, equipment and operation of children's preschool and educational institutions of various profiles.

Topic 11. Nutrition and health of the population. Basics of rational nutrition. Effect of nutrition on general and dental health. Biological safety of food.

Nutrition as a factor in the general and dental health of the population. The actual state of nutrition of the population of Ukraine. Theories of nutrition, food functions and types of nutrition.

Rational nutrition, principles and significance for the formation of the dental and maxillofacial apparatus, tooth mineralization and prevention of dental diseases.

The concept of alimentary diseases, their classification, causes, prevalence in Ukraine.

Hygienic value of nutrients (proteins, fats, carbohydrates, minerals, vitamins), food in the prevention of dental diseases. Food cariogenic factors.

Methods for determining human energy consumption and needs in essential nutrients. Biosafety of food (epidemiological safety and sanitary quality of food).

Topic 12. Influence of the polluted atmospheric air, water and food on dental morbidity of population. Alimentary prophylaxis of dental diseases.

The main polluters of the environment. The impact of polluted air, water and food on dental morbidity.

The relationship between nutrition and the development of major dental diseases. Nutritional composition of the diet and its possible impact on the development of dental diseases. Hygienic value of nutrients (proteins, fats, carbohydrates, minerals, vitamins), food in the prevention of dental diseases. Rationalization of food use in accordance with age, professional, individual characteristics. The concept of dietary supplements.

Dietary nutrition in the treatment of dental diseases.

Topic 13. Physiological and hygienic value of the main nutrients of the diet. Composition and properties of food products.

Physiological and hygienic role of proteins. Scientific substantiation of the need for proteins. Hygienic characteristics of proteins of animal and vegetable origin. Protein quality indicators. Sources of proteins and essential amino acids.

Physiological and hygienic role of fats. Quality indicators of fats of different origins. Physiological and hygienic role of unsaturated fatty acids, phospholipids, sterols. Scientific substantiation of the body's needs for fats. Sources of fats. Culinary fats. "Overheated fats".

Physiological and hygienic role of carbohydrates. Scientific substantiation of the body's need for simple and complex carbohydrates. Carbohydrate quality indicators. Sources of carbohydrates. The concept of refined and "protected" carbohydrates.

Vitamins, mineral salts, flavors, their physiological and hygienic role, importance in the prevention and treatment of dental diseases. Sources of vitamins and minerals. Micro- and macroelementosis, their manifestations and prevention.

Hygienic and nutritional characteristics of basic foods. Milk and dairy products. Meat and meat products. Fish, fish products, seafood. Eggs. Vegetables, fruits, berries, grains, legumes and oilseeds. Diseases associated with the use of bad quality products, their classification.

Topic 14. Hygienic problems of nutrition in the conditions of polluted environment and harmful productions. Therapeutic and preventive nutrition.

Contaminants in food (nitrites, pesticides and fertilizer residues, heavy metals, radionuclides in food raw materials and food).

Basics of nutrition in an environmentally unfavorable environment. Therapeutic and preventive nutrition, types. The concept of products for therapeutic and prophylactic purposes, classification.

Scientific and technological progress and its impact on food quality. The concept of food additives, their classification, purpose and application in the food industry. The concept of genetically modified products. Socio-hygienic problems associated with the use of food additives and genetically modified products.

Topic 15. Methods of calculating human energy consumption and nutrient requirements. Methods of assessing the adequacy of nutrition according to the menu-schedule.

Energy expenditures of the body, components of daily energy expenditure and energy balance of man. Methods of studying energy consumption. Units of energy consumption. Individual features of energy metabolism. The concept of value of the basic exchange.

Physical activity groups of the able-bodied population of Ukraine. The concept of the physical activity coefficient (PhAC). Recommended values of physiological energy needs for different groups of the population of Ukraine. "Norms of physiological requirements of Ukrainian population for basic nutrients and energy" (2017).

Methods for determining the average daily energy consumption (WHO, 1986). Method of calculating energy consumption by timing-tabular method.

Principles of nutrition of people of different ages, professions, athletes.

Methods of studying the actual nutrition of the population. Methods of hygienic assessment of nutrition of collectives by the calculation method according to the menu-schedule. Methods of assessing the adequacy of the actual nutrition of the individual. Indicators of hygienic assessment of the quality of the diet, requirements for the daily diet, regime of diet. Loss of nutrients during cold and heat treatment of food.

Topic 16. Methods of studying and assessing the nutritional status of man and medical control over the supplying of the body with vitamins.

The concept of nutritional status of the organism, methods and criteria for its evaluation. Methods of objective examination of the patient to study and assess nutritional status. Indicators, signs that characterize the violation of protein, fat, carbohydrate, vitamin and mineral status. Methods of determining and criteria for assessing the nutritional status of the organism. Methods for assessing the adequacy of nutrition, its rational correction in accordance with individual physiological needs for energy and nutrients (proteins, fats, carbohydrates, minerals, vitamins).

Vitamin deficiency, causes, prevention. Methods of medical control over the supplying of the body with vitamins.

Topic 17. Methods of investigation of food poisoning cases. Prevention of food poisonings.

The concept of food quality and safety. Microbiological food safety criteria.

Food poisonings, their classification by etiological and pathogenic features, the causes of their occurrence. Methods of investigating cases of food poisonings. Basic principles of prevention of food poisonings of microbial and non-microbial etiology. The role of the dentist in the prevention of food poisonings.

Personal hygiene of workers of public catering establishments.

Topic 18. Methods of research and assessment of the health of children and adolescents under the influence of environmental factors.

Factors and environmental conditions that affect the health of children and adolescents. Methods of comprehensive assessment of the health of children and adolescents. Basic health criteria. Dental health of children and adolescents. Division of children and adolescents by health groups.

Physical development as a leading indicator of health. Key indicators and regional standards of physical development. Methods of hygienic assessment of physical development of the individual and children's team. Modern ideas about acceleration. The concept of biological and calendar age.

School maturity. The concept of daily regime, its types.

Sanitary regulations for general secondary education institutions (Order of Healthcare Ministry of Ukraine N 1111/35394 dated November 10, 2020). Hygiene of school classes. Organization of the educational process in new types of educational institutions. Methods of hygienic assessment of the daily regimen, schedule of lessons, organization of the lesson at school.

Organization of nutrition in children's preschool and school educational institutions and control over it (Resolution N 305 dated March 24, 2021, Kyiv "On approval of norms and procedures for the organization of nutrition in educational institutions and children's recreation facilities" (with changes from August 18, 2021)).

Hygiene of physical education of children and teenagers. The concept of motor activity. Prevention of hypokinesia. Basic types, forms and means of physical culture.

Topic 19. Methods of hygienic assessment of planning, equipment and maintenance of preschool and school educational institutions.

Sanitary regulations for general secondary education institutions (Order of Healthcare Ministry of Ukraine N 1111/35394 dated November 10, 2020).

Land plot of children's institutions, hygienic requirements.

Methods of hygienic assessment of planning, equipment and maintenance of educational preschool institutions and schools.

Hygienic requirements for planning, arrangement, equipment, maintenance of the school and classroom.

Educational furniture, their types, main sizes, hygienic assessment (material from which they are made of; color, sanitary condition, condition of surfaces, corners and edges, number of seats). Rules for selecting furniture and seating students in the classroom in order to prevent posture and vision disorders.

Methods of hygienic assessment of the classroom.

Topic 20. Methods of hygienic control over the organization of physical education and labor training of children and adolescents.

Hygienic requirements for the organization and conduct of lessons of physical education and labor training in schools and educational institutions of a new type (gymnasiums, lyceums, colleges). Hygienic requirements for equipment, planning, equipment and maintenance of the sport zone, gym, labor training workshops.

Basic principles of organization and construction of lessons of physical culture and labor training. Methods of hygienic assessment of the organization and conducting of lessons of physical and labor training at school. Groups of physical training and methods of dividing children into groups. Methods of studying the functional state and productivity of a child.

Thematic module 3. Hygienic bases of services of healthcare facilities, labor protection service in medical institutions

Specific goals

To master the knowledge of the treatment and prevention responsibilities of the dentist, his work in the medical and social expert commissions (MSEC), medical and labor expert commissions (MLEC), medical control commissions (MCC).

To analyze sanitary legislation in the area of occupational health and safety, to make conclusions based on accounting and reporting documentation.

To master the classification of dangerous and harmful conditions, the severity and intensity of the work process, to be able to recognize the resulting health problems of workers.

To assimilate dangerous and harmful professional factors of dental specialties, methods and means of prevention of their adverse effects.

To master the knowledge of the causes of occupational diseases and poisonings, methods and means of their recognition, investigation and prevention.

To justify the implementation of preventive measures for labor protection in accordance with the current legislation of Ukraine.

To master the knowledge of hygienic requirements for the internal planning of medical, including dental, institutions: reception departments, wards, operating rooms, manipulation, dental offices, laboratories, ancillary facilities, etc.

To be able to organize the sanitary regimen of operation of dental institutions, other medical and health facilities, measures to prevent the healthcare-associated infections.

To possess the principles of medical ethics and deontology, prevent iatrogenic diseases, promote socio-psychological adaptation of patients to the hospital environment, use methods and tools of psychohygiene, psychoprophylaxis.

To plan activities for healthy living, personal hygiene and implement them in health care practice.

To substantiate the need, methods and means of hygienic care of the oral cavity as a means of prevention of dental diseases.

To acquire knowledge about the biological action and danger of ionizing factors of natural, man-made origins to human health and about methods and means of protection against them in the workplace, in medicine, for the general population.

To use methods and means of radiation control at working with sources of ionizing radiation in medicine and industrial activity on the basis of “Regulations of radiation safety of Ukraine” (RRSU-97) and other legislative documents.

To be able to organize and provide radiation protection of staff and patients in radiological departments of treatment and prevention facilities.

To be able to organize sanitary and hygienic measures in the general system of medical support of military and civilian formations, the affected population in wartime, during disasters and other emergency situations.

To acquire knowledge about sanitary and hygienic requirements for the field locations of military personnel and the population in field habitations, to organize measures of maintaining of these requirements.

Topic 21. Hygienic requirements for health care facilities, including dental profile. Occupational hygiene of dentists, dental technicians. Biosafety and bioethics of dentists.

Modern structure of treatment and prevention facilities, trends in hospital construction. Creating proper hygienic conditions in the hospital (increasing the efficiency of the treatment process, prevention of healthcare-associated infections, and optimization of working conditions of staff).

Leading factors that determine the creation of hygienic conditions in the hospital: the choice of place for building, requirements for it (size, shape, relief, soil condition, groundwater level, etc.), hospital

construction systems (decentralized, centralized, mixed, centralized-block), planning of the hospital area (zones, housing density, landscaping, ways of moving of patients, staff, vehicles).

Planning and internal arrangement of hospital buildings of the hospital (central reception department; ward section as the main structural and functional element of the hospital; wards). Features of planning and operation of infectious hospitals and departments, boxed sections, boxes.

Polyclinic as the main structural and functional element of outpatient care.

Occupational hygiene of medical staff in dental institutions. The specifics of the impact of harmful and dangerous factors of the production environment on the dentist. Prevention of harmful effects of occupational factors on workers in adverse production conditions.

Topic 22. Hygienic characteristics of harmful and dangerous factors of the occupational environment, their impact on the organism, preventive measures. Occupational hygiene of dentists and dental technicians.

Work and labour, definitions. Social and biological significance of labour. Physiology of labour. Changes in physiological processes in the human body during work. Fatigue and overfatigue. Prevention of fatigue. Hygiene of mental work.

Factors of the occupational environment and labor process.

Harmful factors of the occupational process associated with overstrain of certain organs and systems and improper organization of the labor process.

Physical factors of the production environment in the work of the dentist (noise, ultrasound, vibration, ultraviolet and X-rays), prevention of harmful effects.

Chemical factors of the production environment in the work of a dentist and dental technician (mercury, lead, polymeric materials, etc.). Diseases associated with them, prevention measures.

Biological factors, bacterial pollution of the air and of tools in a dental hospital, prevention of their harmful effects.

Hygienic classification of labor on the indicators of harmfulness and danger of factors of the production environment, severity and intensity of labor process

Measures to improve the working conditions of medical workers.

Means of individual protection against harmful and dangerous factors of the production environment in the offices of therapeutic dentistry, hospitals of surgical and orthopedic dentistry, dental laboratories.

Prevention of harmful effects of production factors on the body, of the spread of dental diseases in workers in adverse production conditions.

Topic 23. Features of the combined, complex and joint action of harmful factors on a dentist and a dental technician.

The value of hygienic rationing of harmful chemicals, physical and biological factors. Principles of hygienic rationing. The concept of combined, complex, combined action. The main types of combined action: antagonism, potentiation, additivity, independent action.

Hygienic features of working conditions and health status of dentists and dental technicians with combined, complex and combined effects of harmful factors on the body. Measures to improve the working conditions of medical staff of dental institutions.

Topic 24. Methods of investigation of occupational diseases cases during the work of a dentist and dental technician.

Recognition and investigation of cases of occupational poisoning and diseases of dentists, regulatory and instructional documentation.

Implementation of preventive measures against occupational diseases and poisonings, evaluation of their effectiveness.

Preparation of the necessary documentation for the investigation of cases of occupational poisonings and diseases.

Topic 25. Hygienic requirements for location, equipment, maintenance and operation of certain structural units of dental institutions.

Dental clinic. Hygienic requirements for the arrangement and operation of departments of therapeutic, surgical, orthopedic dentistry, dental laboratory.

Sanitary and technical conditions of a hospital (water supplying, sewerage, ventilation, electricity, etc.).

Methods of objective control over the observance of hygienic conditions in dental institutions.

Topic 26. Hygienic assessment of the patients' conditions in health care facilities, including dental profile.

Modern hospital building systems (centralized, decentralized, mixed, centralized-block), their comparative hygienic assessment, prospects for improvement. Hygienic requirements for hospital land plot.

Hygienic requirements for the main indicators of construction (distance from sources which can pollute the air, soil; area, density of buildings and landscaping, the location of buildings, sanitation of the site), functional zoning of the territory.

Hygienic requirements for the planning, equipment and regimen of operation of departments: reception (for somatic, infectious, pediatric departments), therapeutic, surgical, infectious profile, children's departments, specialized hospitals (psychoneurological, tuberculosis, etc.).

Ward section, its composition, hospital ward, types of its planning and equipment for somatic, infectious, mental patients, for intensive care units, rehabilitation. Features of planning boxes, semi-boxes in infectious, children's departments of the hospital.

Hygienic requirements for the area, cubature of wards, their scientific substantiation.

Requirements for the orientation of windows, microclimate, air environment, lighting, heating, ventilation, noise in wards.

Prevention of food poisonings and infections in the hospital. Organization and means of objective control over the health of the staff of the catering departments of hospitals and over personal hygiene of staff.

Topic 27. Hygienic bases of the organization of the sanitary-and-anti-epidemic regimen in stomatological treatment-and-prophylactic institutions.

Sanitary and anti-epidemic regime of the medical institution, its essence and tasks. Hygienic bases of the organization of the sanitary and anti-epidemic regimen in stomatological treatment-and-prophylactic establishments.

Hygienic requirements for dental equipment, tools, rules of its maintenance and disinfection.

Healthcare-associated infections, conditions that lead to their occurrence and their negative consequences. Methods and means of prevention (Order of Healthcare Ministry of Ukraine N 1614 dated August 03, 2021 "On the organization of infection prevention and infection control in healthcare institutions and establishments (institutions of social services) of social protection").

Features of the organization of disinfection and sterilization regimen in dental institutions. Laboratory and instrumental control over compliance with sanitary and hygienic, anti-epidemic requirements for the maintenance and operation of dental institutions.

Topic 28. Radiation hygiene. Ionizing radiation as an environmental factor and industrial hazard. Radiation protection in medical institutions, including dental profile. Bioethical aspects of radiation influence on a person.

Ionizing radiation as a factor of the environment, their sources: natural, man-made, industrial.

Classification of ionizing radiation by nature and origin. Qualitative and quantitative characteristics of ionizing radiation and radionuclides, units of their measurement.

Biological action of ionizing radiation. Modern ideas about its mechanisms, the conditions on which it depends, its features. Deterministic and stochastic effects of human exposure, conditions of their occurrence, the use of this knowledge in the practice of physicians. The concept of external and internal radiation exposure.

Radiation safety of the population in places of residence, the factors that determine it. Regularities of formation of radiation load of the population, its hygienic assessment and ways of reduction.

Impact of NPPs on environmental objects. Radiation and ecological situation of environmental objects in Ukraine after the Chernobyl accident. Sanitary and hygienic measures of the accident elimination. The Chernobyl disaster and its consequences for public health and the environment. Permissible levels of contamination of water and food with cesium and strontium.

Hygienic standardization of ionizing radiation. Regulations of radiation safety of Ukraine (RRSU-97), their meaning and main provisions. Primary sanitary regulations of radiation protection of Ukraine (PSRU-05) as a state normative document that defines the basic requirements for the implementation of radiation protection in practice. Limits of radiation doses.

Bioethical aspects of radiation influence on a person.

Topic 29. Methods of control of radiation protection of personnel and radiation safety of patients during the use of radionuclides and other sources of ionizing radiation in medical institutions, in particular in the radiology department (room) of the dental clinic.

Ionizing radiation as an industrial hazard in the work of medical personnel. The main doses of radiation, their characteristics. The use of sources of ionizing radiation in medicine.

The concept of radiation protection of personnel and radiation safety of patients during the use of radionuclides and other sources of ionizing radiation. Radiation safety of patients and staff during X-ray examinations in dentistry. Requirements for placement, arrangement, operating regime of the X-ray dental room.

Radiation control over the production environment and individual radiation doses of personnel, medical control over the health of workers. Principles of radiation safety.

Topic 30. Methods for assessing radiation hazard and parameters of protection against external radiation.

Medical X-ray diagnostic procedures as the main components of radiation exposure of the population and employees of dental institutions, their hygienic assessment and special measures to reduce their contribution to the total radiation dose.

Conditions that determine the radiation hazard during the work with radionuclides and other sources of ionizing radiation.

The concept of sealed and bare sources of ionizing radiation, features of radiation hazard and radiation protection during their work.

Measures of radiation protection against external radiation based on the physical laws of its damping (protection by quantity (amount), by time, by distance, by shields).

Radiation protection of workers as a hygienic problem, its essence and basic principles of implementation. Mandatory personal protective equipment. Methods for determining the parameters of radiation hazard. Values of calculation methods for radiation hazard assessment and parameters of protection against external radiation.

Topic 31. Hygienic principles of a healthy lifestyle and personal hygiene. Methods of hygienic assessment of oral care products.

Healthy lifestyle, definition, content. Personal hygiene as a branch of hygienic science, its content and importance for maintaining and promoting health in modern conditions.

Body and oral hygiene. Modern oral care products (toothbrushes, toothpastes, oral irrigators, etc.), requirements for materials and finally made products, their hygienic evaluation.

Topic 32. Personal hygiene, its components. Physical training and basics of tempering. Hygiene of clothes and shoes. Washing agents, their hygienic characteristics.

Personal hygiene, definition, its components. Motor activity. The concept of active and passive recreation. Sleep hygiene.

Physical training as one of the most important elements of personal hygiene in modern conditions. Types of physical training, the importance of morning gymnastics, being in the fresh air, walks to prevent diseases, including in a dentist.

Tempering, definition. Factors and principles of tempering.

Hygiene of clothes and shoes. Hygienic requirements for materials for their manufacture. Washing agents, their hygienic characteristics.

Topic 33. Psycho-hygienic basics of daily human activity. Scientific bases of medical biorhythmology and chronohygiene.

Psychohygiene as a science, its tasks and parts. Mental health, its criteria. Psychohygiene of medical staff of treatment and prevention facilities, including dental. Occupational factors that negatively affect the work of medical staff. Psycho-hygienic education of patients in the hospital. Iatrogenic, therapeutic, preventive value of the word in daily life, at work, in the relationship between doctor and patient. Leading features of human personality (properties of temperament and character, motivation direction and features of neuro-psychological state), methods of their study.

Prerequisites and causes of medical biorhythmology. Biological rhythms, their impact on human health. Characteristics of biological rhythms, their classification. Methods for determining different types of daily curves of human biological rhythms. The concept of cycles of changes in the functional state of the organism. Desynchronization, their types, causes. Psycho-hygienic bases of daily human activity optimization. Biorhythmological principles of rational organization of working (educational) process and personal free time.

Topic 34. Prevention of alcoholism, narcomania, toxicomania, smoking.

Adverse health effects of active and passive tobacco abuse. Adverse health effects of alcohol abuse. Drug abuse and toxicomania, their harmful effects on health. Causes of drugs use, mental and physical drugs dependence.

Medical and social problems, meanings, ways and means of prevention of harmful habits.

Topic 35. Hygienic characteristics of climate and weather of hot and tropical latitudes. Features of the impact of tropical climate on living conditions, work capacity and population health. Peculiarities of inhabited area planning and build-up in arid and humid tropic climate. Organization and regimen of work in the arid and humid climate of the tropics.

Health problems and diseases typical for hot and tropical climates and their prevention.

Features of the work organization and regimen, of personal hygiene in the arid and humid climate of the tropics. Microclimate parameters at which physical work is impossible.

Features of the body's energy needs, of nutrients amount and ratio in tropical climate.

General characteristics of alimentary dependent diseases among the population of tropical regions, methods and means of their prevention.

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

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

Natural and anthropogenic disasters. Sanitary and hygienic measures in emergency situations.

Topic 36. Hygienic, toxicological and epidemiological problems of nutrition of the population of tropical regions. Water supply hygiene in tropical climate. Organization and carry out of sanitary supervision over methods of water purification and disinfection in the tropics.

Hygienic characteristics of food used by the population of tropical countries. Food poisonings in tropical countries and their prevention.

Hygienic requirements for drinking water quality and their peculiarities in tropical climate. International standard for drinking water quality and features of its use in the tropics. Features of using of methods of water purification and disinfection in the tropics.

3. Structure of the discipline

Topic	Lectures	Practical classes	Self-reliant study	Individual assignment
<i>Thematic module 1. Hygienic significance of environment and methods of hygienic researches</i>				
Topic 1. Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic value. Bioethical aspects of environmental effect on a person.	2	–	–	–
Topic 2. Hygienic value of biosphere components (atmosphere, hydrosphere, lithosphere).	–	–	3	
Topic 3. Methods of hygienic researches. Methods for determining the prophylactic dose of ultraviolet radiation and the use of ultraviolet radiation to prevent disease and to air sanitation.	–	2	–	
Topic 4. Methods of determination and hygienic assessment of natural and artificial lighting in premises of different functional purpose.	–	2	–	
Topic 5. Microclimate, its hygienic value. Methods of determination and hygienic assessment of temperature, humidity, air velocity and radiation temperature. Hygienic value of the direction of air movement.	–	2	–	
Topic 6. Methods of hygienic assessment of climatic and weather conditions, their impact on human health. Acclimatization. Sanitary protection and biosafety of atmospheric air.	–	–	3	
Topic 7. Hygienic significance of air environment of premises, its hygienic evaluation (determining of CO ₂ concentration, oxidability index, dust, chemical and bacteriological contamination).	–	2	–	
Topic 8. Hygiene of inhabited places, its bioethical issues. Hygiene of water and water supply. Effect of water quality on general and dental health of population.	2	–	–	
Topic 9. Methods of hygienic assessment of drinking water. Endemic fluorosis and caries as hygienic problems, their prevention.	–	2	–	

Topic	Lectures	Practical classes	Self-reliant study	Individual assignment
Topic 10. Hygienic evaluation of sanitary condition of the soil. Modern hygienic and bioethical problems of sanitary purification of settlements.	–	2	–	–
Total for thematic module 1	4	12	6	–
<i>Thematic module 2. Hygienic principles of nutrition, hygiene of children and adolescents</i>				
Topic 11. Nutrition and health of the population. Basics of rational nutrition. Effect of nutrition on general and dental health. Biological safety of food.	2	–	–	
Topic 12. Influence of the polluted atmospheric air, water and food on dental morbidity of population. Alimentary prophylaxis of dental diseases.	–	–	3	
Topic 13. Physiological and hygienic value of the main nutrients of the diet. Composition and properties of food products.	–	–	3	
Topic 14. Hygienic problems of nutrition in the conditions of polluted environment and harmful productions. Therapeutic and preventive nutrition.	–	–	3	
Topic 15. Methods of calculating human energy consumption and nutrient requirements. Methods of assessing the adequacy of nutrition according to the menu-schedule.	–	2	–	–
Topic 16. Methods of studying and assessing the nutritional status of man and medical control over the supplying of the body with vitamins.	–	2	–	
Topic 17. Methods of investigation of food poisoning cases. Prevention of food poisonings.	–	2	–	
Topic 18. Methods of research and assessment of the health of children and adolescents under the influence of environmental factors.	–	2	–	
Topic 19. Methods of hygienic assessment of planning, equipment and maintenance of preschool and school educational institutions.	–	–	3	
Topic 20. Methods of hygienic control over the organization of physical education and labor training of children and adolescents.	–	–	3	
Total for thematic module 2	2	8	15	–
<i>Thematic module 3. Hygienic bases of services of healthcare facilities, labor protection service in medical institutions</i>				
Topic 21. Hygienic requirements for health care facilities, including dental profile. Occupational hygiene of dentists, dental technicians. Biosafety and bioethics of dentists.	2	–	–	–
Topic 22. Hygienic characteristics of harmful and dangerous factors of the occupational environment, their impact on the organism, preventive measures. Occupational hygiene of dentists and dental technicians.	–	2	–	
Topic 23. Features of the combined, complex and joint action of harmful factors on a dentist and a dental technician.	–	–	3	
Topic 24. Methods of investigation of occupational diseases cases during the work of a dentist and dental technician.	–	–	3	
Topic 25. Hygienic requirements for location, equipment, maintenance and operation of certain structural units of dental institutions.	–	2	–	

Topic	Lectures	Practical classes	Self-reliant study	Individual assignment	
Topic 26. Hygienic assessment of the patients' conditions in health care facilities, including dental profile.	–	2	–	–	
Topic 27. Hygienic bases of the organization of the sanitary-and-anti-epidemic regimen in dental treatment-and-prophylactic institutions.	–	–	3		
Topic 28. Radiation hygiene. Ionizing radiation as an environmental factor and industrial hazard. Radiation protection in medical institutions, including dental profile. Bioethical aspects of radiation influence on a person.	2	–	–		
Topic 29. Methods of control of radiation protection of personnel and radiation safety of patients during the use of radionuclides and other sources of ionizing radiation in medical institutions, in particular in the radiology department (room) of the dental clinic.	–	2	–		
Topic 30. Methods for assessing radiation hazard and parameters of protection against external radiation.	–	–	3		
Topic 31. Hygienic principles of a healthy lifestyle and personal hygiene. Methods of hygienic assessment of oral care products.	–	2	–		
Topic 32. Personal hygiene, its components. Physical training and basics of tempering. Hygiene of clothes and shoes. Washing agents, their hygienic characteristics.	–	–	3		
Topic 33. Psycho-hygienic basics of daily human activity. Scientific bases of medical biorhythmology and chronohygiene.	–	–	3		
Topic 34. Prevention of alcoholism, narcomania, toxicomania, smoking.	–	–	3		
Topic 35. Hygienic characteristics of climate and weather of hot and tropical latitudes. Features of the impact of tropical climate on living conditions, work capacity and population health. Peculiarities of inhabited area planning and build-up in arid and humid tropic climate. Organization and regimen of work in the arid and humid climate of the tropics.	–	–	4		
Topic 36. Hygienic, toxicological and epidemiological problems of nutrition of the population of tropical regions. Water supply hygiene in tropical climate. Organization and carry out of sanitary supervision over methods of water purification and disinfection in the tropics.	–	–	4		
Total for thematic module 3	4	10	29		–
Total hours – 90 / 3 credits ECTS	10	30	50		–
Final control	Exam				

4. Thematic plan of lectures

N	Topic	Hours
1.	Hygiene as a science. Ecology as a science. Environment and human health. Biosphere, its hygienic value. Bioethical aspects of environmental effect on a person.	2
2.	Hygiene of inhabited places, its bioethical issues. Hygiene of water and water supply. Effect of water quality on general and dental health of population.	2

3.	Nutrition and health of the population. Basics of rational nutrition. Effect of nutrition on general and dental health. Biological safety of food.	2
4.	Hygienic requirements for health care facilities, including dental profile. Occupational hygiene of dentists, dental technicians. Biosafety and bioethics of dentist labour.	2
5.	Radiation hygiene. Ionizing radiation as an environmental factor and industrial hazard. Radiation protection in medical institutions, including dental profile. Bioethical aspects of radiation influence on a person.	2
	Total	10

5. Thematic plan of practical classes

N	Topic	Hours
1.	Methods of hygienic researches. Methods for determining the prophylactic dose of ultraviolet radiation and the use of ultraviolet radiation to prevent disease and to air sanitation.	2
2.	Methods of determination and hygienic assessment of natural and artificial lighting in premises of different functional purpose.	2
3.	Microclimate, its hygienic value. Methods of determination and hygienic assessment of temperature, humidity, air velocity and radiation temperature. Hygienic value of the direction of air movement.	2
4.	Hygienic significance of air environment of premises, its hygienic evaluation (determining of CO ₂ concentration, oxidability index, dust, chemical and bacteriological contamination).	2
5.	Methods of hygienic assessment of drinking water. Endemic fluorosis and caries as hygienic problems, their prevention.	2
6.	Hygienic evaluation of sanitary condition of the soil. Modern hygienic and bioethical problems of sanitary purification of settlements.	2
7.	Methods of calculating human energy consumption and nutrient requirements. Methods of assessing the adequacy of nutrition according to the menu-schedule.	2
8.	Methods of studying and assessing the nutritional status of man and medical control over the supplying of the body with vitamins.	2
9.	Methods of investigation of food poisoning cases. Prevention of food poisonings.	2
10.	Methods of research and assessment of the health of children and adolescents under the influence of environmental factors.	2
11.	Hygienic characteristics of harmful and dangerous factors of the occupational environment, their impact on the organism, preventive measures. Occupational hygiene of dentists and dental technicians.	2
12.	Hygienic requirements for location, equipment, maintenance and operation of certain structural units of dental institutions.	2
13.	Hygienic assessment of the patients' conditions in health care facilities, including dental profile.	2
14.	Methods of control of radiation protection of personnel and radiation safety of patients during the use of radionuclides and other sources of ionizing radiation in medical institutions, in particular in the radiology department (room) of the dental clinic.	2
15.	Hygienic principles of a healthy lifestyle and personal hygiene. Methods of hygienic assessment of oral care products.	2
	Total	30

6. Thematic plan of self-reliant study

N	Topic	Hours	Control
1.	Hygienic value of biosphere components (atmosphere, hydrosphere, lithosphere).	3	Current control at practical classes
2.	Methods of hygienic assessment of climatic and weather conditions, their impact on human health. Acclimatization. Sanitary protection and biosafety of atmospheric air.	3	
3.	Influence of the polluted atmospheric air, water and food on dental morbidity of population. Alimentary prophylaxis of basic dental diseases.	3	
4.	Physiological and hygienic value of the main nutrients of the diet. Composition and properties of food products.	3	
5.	Hygienic problems of nutrition in the conditions of polluted environment and harmful productions. Therapeutic and preventive nutrition.	3	
6.	Methods of hygienic assessment of planning, equipment and maintenance of preschool and school educational institutions.	3	
7.	Methods of hygienic control over the organization of physical education and labor training of children and adolescents.	3	
8.	Features of the combined, complex and joint action of harmful factors on a dentist and a dental technician.	3	
9.	Methods of investigation of occupational diseases cases during the work of a dentist and dental technician.	3	
10.	Hygienic bases of the organization of the sanitary-and-anti-epidemic regiment in dental treatment-and-prophylactic institutions.	3	
11.	Methods for assessing radiation hazard and parameters of protection against external radiation.	3	
12.	Personal hygiene, its components. Physical training and basics of tempering. Hygiene of clothes and shoes. Washing agents, their hygienic characteristics.	3	
13.	Psycho-hygienic basics of daily human activity. Scientific bases of medical biorhythmology and chronohygiene.	3	
14.	Prevention of alcoholism, narcomania, toxicomania, smoking.	3	
15.	Hygienic characteristics of climate and weather of hot and tropical latitudes. Features of the impact of tropical climate on living conditions, work capacity and population health. Peculiarities of inhabited area planning and build-up in arid and humid tropic climate. Organization and regimen of work in the arid and humid climate of the tropics.	4	
16.	Hygienic, toxicological and epidemiological problems of nutrition of the population of tropical regions. Water supply hygiene in tropical climate. Organization and carry out of sanitary supervision over methods of water purification and disinfection in the tropics.	4	
Total		50	

7. Individual assignment is not provided.

8. Learning methods

There are traditional teaching methods (verbal, visual, practical), methods of teaching and learning activities (explanatory and illustrative one, method of problem

statement, scientific and research methods), methods of stimulation and motivation of educational and cognitive activity (methods of stimulation and motivation of training, methods of control and self-control as teaching methods), methods of control of stimulation and motivation of educational and cognitive activity of students (control by the teacher, self-control, mutual control, self-correction, mutual corrections, corrections and integrated methods) in educational process in teaching discipline “Hygiene and ecology”.

9. Control methods

Current and final control, assessment of knowledge, abilities and skills are carried out in accordance with the requirements of the discipline curriculum and “Instruction for assessing students’ learning under the implementation of the European credit transfer system of the educational process”, approved by the Ministry of Healthcare of Ukraine on 15.04.2014.

Current control is carried out at each practical lesson in accordance with the specific objectives of the lesson to determine the level of formation of a particular skill or ability, the quality of learning material based on a comprehensive assessment of student activities, including control of independent student preparation for lesson, quality of practical work and the results of the final control of the level of knowledge and skills. During the current control of students’ educational activities, preference is given to standardized methods of control: testing, structured written work, control of practical skills in situations which are close to real. Oral examination (frontal, individual, combined) is also used. The student is assessed at each practical lesson by means of a four-point (national) scale according to the approved evaluation criteria.

Final control - the exam is held after the completion of the discipline in the 3rd semester. A student is considered eligible for the exam if they have attended all auditory lessons, have made all types of work provided by the Curriculum, and has received amount of points not less than the minimum. Questions on topics for independent extracurricular study are also included in the final control.

The examination is passed in writing form during the examination session according to the schedule. The form of the exam is standardized, includes control of theoretical and practical training.

The stages of the exam:

I stage – to write answer on 30 MCQs of format A (blank test control) from topics of thematic modules.

II stage – to write answer on 3 standardized questions and to solve one situational task.

III stage – to check practical skills.

The following evaluation criteria are used during the final control.

10. Current control is carried out during practical classes and aims to verify the assimilation of learning material by students.

10.1. Evaluation of current educational activities. The student is graded on a 4-point (national) scale when assessing knowledge of each topic (taking into account all types of work provided by the program of the discipline). The student must receive a mark from each topic for further converting the marks into points of a 200-point scale.

Theoretical knowledge and practical training of students are assessed by the following criteria:

Excellent (“5”) – a student correctly answers 90-100% of A-format tests; correctly, clearly, logically and fully answers all standardized questions of the current topic, including issues of lecture course and independent work (self-reliant study); closely connects theory with practice; correctly makes practical work with writing a conclusion; freely analyses the results of laboratory tests; solves situational complicated tasks; can summarize the material; masters necessary methods of laboratory tests fully.

Good (“4”) – a student correctly answers 70-89% of the A-format tests; correctly and essentially answers the standardized questions of the current topic, lecture course and independent work; demonstrates performance (knowledge) of practical skills; correctly uses theoretical knowledge in solving practical tasks; can solve easy and moderate situational tasks; masters necessary practical skills and techniques on higher level than required minimum.

Satisfactory (“3”) – a student correctly answers 50-69% of the A-format tests; incomplete, answers the standardized questions with the help of additional questions; can't give a clear, logical answer on their own; makes mistakes when answering and demonstrating practical skills; solves only the easiest tasks, masters only a minimum amount of research methods.

Unsatisfactory (“2”) – a student answers less than 50% of the A-format tests; does not know the material of the current topic; can't build a logical answer, does not answer additional questions; does not understand the content of the material; makes significant mistakes when answering and demonstrating practical skills.

11. Form of a final control of academic studies - semester exam - form of a final control of students' mastering of theoretical and practical material of the discipline.

12. The scheme of calculation and distribution of points that students receive:

The maximum number of points that a student can receive during the current educational activity for admission to the exam is 120 points.

The minimum number of points that a student must receive during the current educational activity for admission to the exam is 72 points.

Calculation of points for the current educational activity is based on student's marks of the 4-point (national) scale by calculating the arithmetic mean value (M), rounded to two decimal places. The resulting value is converted into points as follows:

$$x = \frac{M \times 120}{5}$$

or according to the table of recalculation on a 200-point scale:

**Recalculation of the average mark (M) of
current educational activity into points of multipoint scale
for a discipline a discipline which is ended with exam**

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	3,99	72
4,58	110	4,04	97	3,49	84	less 3	not enough
4,54	109	3,99	96	3,45	83		
4,5	108	3,95	95	3,41	82		

Self-reliant study of students is evaluated at the final control.

The maximum number of points that a student can receive during the exam is 80 points.
The minimum number of points for the exam – not less than 50 points.

Meaning of exam points:

Test control: 26-30 correct answers – 20 points

21-25 correct answers – 15 points

15-20 correct answers – 10 points

less than 15 correct answers – 0 points

Standardized questions of integrated tasks:

12 points – a student correctly completed the task and made a reasoned conclusions, gave the correct answers at least 80% of the integrated task or question;

10 points – a the student correctly completed the task and made a reasoned conclusions, gave the correct answers at least 65% of the integrated task or question;

8 points – a student correctly completed the task and has given correct answers to at least 50% of the integrated task or question;

0 points – a student did not make the task, was not able to analyze and interpret it,

gave the correct answers less than 50% of the integrated task or question.

The practical work (research), demonstration of practical skills, solving situational tasks, analyses and interpretation of research results, making of informed decisions:

12 points – a student properly completed all planned practical work and was able to analyze and interpret research results, made reasoned conclusions, gave the correct answers not less than 80% of situational task;

10 points – a student properly completed all planned practical work and was able to analyze and interpret research results, made reasoned conclusions, gave the correct answers at least 65% of situational task;

8 points – a student properly completed all planned practical work and was able to analyze and interpret research results, made reasoned conclusions, gave the right answers not less than 50% of situational task;

0 points – a student completed all planned practical work incorrectly, was not able to analyze and interpret research results, gave the correct answers less than 50% of situational task.

Table of final (exam) control evaluation

Test control	Written control			Situational task	Demonstration of practical skills
	Question				
	1	2	3		
“5” – 20 points (91-100 % of correct answers)	“5” 12 points	“5” 12 points	“5” 12 points	“5” 12 points	“5” 12 points
“4” – 15 points (71-90 % of correct answers)	“4” 10 points	“4” 10 points	“4” 10 points	“4” 10 points	“4” 10 points
“3” – 10 points (50-70 % of correct answers)	“3” 8 points	“3” 8 points	“3” 8 points	“3” 8 points	“3” 8 points
“2” – 0 points (less than 50% of correct answers)	“2” 0 points	“2” 0 points	“2” 0 points	“2” 0 points	“2” 0 points

The mark for the discipline, which ends with an exam, is defined as the sum of points for the current educational activity (not less than 72) and points for the exam (not less than 50).

Points of the discipline are independently converted into both the ECTS scale and the 4-point (national) scale. The points of students studying in one specialty are ranked on the ECTS scale, taking into account total points of the discipline, as follows:

Evaluation ECTS	Statistical parameter
A	The best 10% of students
B	The following 25% of students
C	The following 30% of students
D	The following 25% of students
E	The lowest 10% of students

Ranking with the assignment of grades “A”, “B”, “C”, “D”, “E” is made for students of this course, who study in one specialty and have successfully completed the discipline. Students who receive grades “FX”, “F” (“2”) are not included in this list of students; they automatically will receive an “E” after retaking the exam.

Points of the discipline for students who have successfully completed the program are converted into the traditional 4-point scale according to the following criteria:

Points of the discipline	Mark in 4-point scale
from 170 till 200 points	5
from 140 till 169 points	4
from 139 till minimal points a student must receive	3
less than minimal points a student must receive	2

The ECTS score is not converted into the traditional scale because the ECTS scale and the 4-point scale are independent.

The objectivity of the evaluation of student’s learning activity is verified by statistical methods (the correlation coefficient between the ECTS grade and the national scale grade).

13. Methodical support includes abstract or full text of lectures; plans of practical classes, for self-reliant study; methodical recommendations for teachers of each practical topic; methodical recommendations for students of each practical topic, containing control questions, situational tasks and tests for current control; methodical recommendations for self-reliant study of students, containing control questions, situational tasks and tests for self-control; normative-methodical documents, demonstration materials, instructions for using of technical teaching devices and equipment.

14. Recommended literature

Principal

1. Hygiene and ecology / ed. by V.G. Bardov. Vinnytsa : Nova Knyga, 2018. 688 p.
2. Korobchanskiy V. A., Vorontsov M. P., Mususlbass A.A. Hygiene and ecology : student’s text-book. Kharkiv : Kontrast Publishing Enterprise, 2006. 207 p.

Additional

1. Гігієна та екологія : підручник / за заг. ред. В. Г. Бардова. Вінниця : Нова Книга, 2020. 472 с.
2. Гігієна стоматологічних закладів : посібник / І. Т. Матасар та ін. Київ : Вольф, 2010. 146 с.
3. Гігієна праці : підручник / за ред. Ю. І. Кундієва, О. П. Яворовського. Київ : ВСВ «Медицина», 2011. 904 с.
4. Гігієна та охорона праці медичних працівників : навч. посібник / за ред. В. Ф.

- Москаленка, О. П. Яворовського. Київ : Медицина, 2009. 176 с.
5. Гігієна харчування з основами нутриціології : підручник / за ред. В. І. Ципріяна. Київ : Медицина, 2007. Т.1. 528 с.
 6. Гігієна харчування з основами нутриціології / за ред. В. І. Ципріяна. Київ, 1999. 568 с.
 7. Даценко І. І., Габович Р. Д. Основи загальної і тропічної гігієни. Київ : Здоров'я, 1995. 424 с.
 8. Даценко І. І., Габович Р. Д. Профілактична медицина. Загальна гігієна з основами екології : підручник. Київ : Здоров'я, 2004. 792 с.
 9. Загальна гігієна : посібник для практичних занять / за ред. І. І. Даценко. Львів : 2001. 472 с.
 10. Загальна гігієна: пропедевтика гігієни : підручник / за ред. Є. Г. Гончарука. Київ : Вища школа, 1995. 552 с.
 11. Загальна гігієна та екологія людини : навч. посібник / В. Г. Бардов та ін. Вінниця : Нова книга, 2002. 216 с.
 12. Комунальна гігієна / за ред. Є. Г. Гончарука. Київ : Здоров'я, 2003. 728 с.
 13. Мащенко М. П., Мечов Д. С., Мурашко В. О. Радіаційна гігієна. Харків, 1999. 389 с.
 14. Основи стоматологічної діяльності (організаційно-правові, гігієнічні, деонтологічні) : навч.-довідк. посібник / під заг. ред. В. Г. Бардова. Вінниця : Нова Книга, 2011. 400 с.

15. Information resources

1. Official web resources of the President of Ukraine, Verkhovna Rada of Ukraine, the Ministry of Education and Science of Ukraine, the Ministry of Healthcare of Ukraine and other central authorities of Ukraine, educational web resources of higher medical educational institutions of Ukraine.
2. Electronic textbooks and manuals.