

**Kharkiv National Medical University**  
**IV medical faculty**  
**Department of Hygiene and ecology No 1**  
**Hygiene and ecology**  
**Educational program for training specialists of the second (master's)**  
**level of higher education training 22 "Health Care"**  
**in specialty 221 "Dentistry"**

**SYLLABUS OF THE COURSE**  
**HYGIENE AND ECOLOGY**

Syllabus of the course  
approved at the meeting  
of Department of Hygiene and Ecology No.1

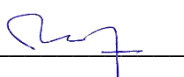
Approved by Methodical Commission of KhNMU  
on Problems of Professional Training of Public  
Health

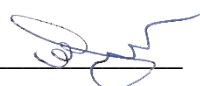
Record of proceedings dated  
"27" August 2020 No. 1

Record of proceedings dated  
"31" August 2020 No. 12

Head of Department

Head of Methodical Commission

  
\_\_\_\_\_ Korobchanskiy V.O.

  
\_\_\_\_\_ Ognev V.A.

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**Offline consultations:** schedule and venue according to the schedule of the department.

**Online consultations:** schedule and venue by prior arrangement with the teacher.

**Location:** classes are held by address: Trinklera str., 6, 3rd floor, Department of Hygiene and Ecology No 1.

### Discipline information

Name of indexes	Area of knowledge, direction of preparation, educationally-qualifying level	Characteristic of educational discipline	
		daily form of studies	evening form of studies
Number of credits – <b>3</b>	Direction of training <b><u>22 Health Care</u></b>	normative	
Total number of hours - <b>90</b>	Speciality: <b><u>221 «Dentistry»</u></b>	<b>Year of training:</b>	
		<b>2<sup>nd</sup></b>	-
		<b>Semester</b>	
		<b>4<sup>th</sup></b>	-
Hours for daily form of studies: auditorium – <b>40</b> independent work of student - <b>50</b>	Educational-qualifying degree: <b><u>«Master»</u></b> in speciality «Dentistry»	<b>Lectures</b>	
		10 h.	-
		<b>Practical, seminar</b>	
		30 h.	-
		<b>Laboratory</b>	
		-	-
		<b>Independent work</b>	
		50 h.	-
<b>Individual task:</b>			
<b>Kind of control:</b> differencial credit			

Educational program of higher education of Ukraine, second (master's) level, educational qualification assigned - master's degree, field of knowledge - 22 Health Care, specialty 221 "Dentistry" is based on the Law of Ukraine "On Higher Education" and the resolution of the Cabinet of Ministers of Ukraine 01.02.2017 № 53 "On amendments to the resolution of the Cabinet of Ministers of Ukraine dated 29.04.2015 № 266", in accordance with the order of the Ministry of Education and Science of Ukraine dated 01.06.2016 № 600 "On approval and implementation of Methodological recommendations for the development standards of higher education".

The course program determines the prerequisites for access to training, orientation and main focus of the program, the amount of ECTS credits required for a master's degree, a list of general and special (professional) competencies, normative and variable content of training, formulated in terms of learning outcomes and control requirements quality of higher education.

The department accepts qualified students of any race, national or ethnic origin, sex, age, people with special needs, any religion, sexual orientation, gender, veteran status or marital status for all rights, privileges, programs and activities, provided to university students.

Discipline page in Moodle system:

<http://31.128.79.157:8083/course/view.php?id=452>

**Description of the discipline (abstract).** Hygiene and ecology as educational discipline which sets the foundations of study of factors of environment and their influence on the common human health; arms doctors with practical skills for realization of certain prophylactic measures, in relation to following a healthy and sick man rules of the personal hygiene, hygiene of nutrition, way of life, labour, child-rearing and education of children and teenagers, maintenance of medical and preventive establishments in the proper sanitary state, providing of radiation safety of patients and personnel of establishments; opens wide possibilities for forming for the future doctors of the prophylactic thinking, arms them with fundamental theoretical knowledge and practical skills, sent to maintenance and strengthening of general health, continuation of creative longevity and life-span on the whole.

The discipline is based on the study by students of the study of medical biology, medical and biological physics, medical chemistry, biological and bioorganic chemistry, human anatomy, safety of vital functions, basis of labour protection and integrates with these disciplines. It lays the foundations for students to study physiology, pathology, toxicology and propaedeutics of medical disciplines, which involves the integration of teaching with these disciplines and the formation of skills to apply knowledge of hygiene and ecology in the process of further training and professional activity. Systematic study of the subject lays the foundations for understanding reasons of appearance of the most common diseases, monitoring the course of the disease, working out measures to prevent the occurrence and development of pathological processes. The main task of hygiene and ecology as a fundamental discipline is to provide a scientific approach and lay new theoretical foundations of clinical thinking of the future doctor.

*Prerequisites.* The study of the discipline involves the prior mastering of disciplines in medical biology, biophysics, medical and bioorganic chemistry, basis of labour protection, physiology, pathology.

*Postrequisites.* The main provisions of the discipline should be applied in the study of related disciplines during the next years of study, is the basis for preparation for the licensing exam EDKI, preparation for study in higher education institutions in the programs of the third educational and scientific level of higher education.

**Aim:** the studying the influence of environmental factors on human health, his working capacity and life expectancy, in order to optimize favorable and prevent adverse effects by developing standards, requirements and sanitary measures aimed at improving the health of populated areas, living conditions and human activities, and the formation on this basis of hygienic-scientific thinking necessary for successful training of specialists who have a significant amount of theoretical and practical knowledge about the influence of factors of the natural and modified environment on the state of health of a person and society, and providing a theoretical basis for the study of other medical and biological disciplines.

**The main objectives of the course are** the acquisition by students of competencies in accordance with the general and professional competencies of the educational-professional program "Medicine" of the second level of higher education in the specialty 221 "Dentistry" (discipline "Hygiene and ecology"):

- *Integral:* Ability to solve the typical and the intricate specialized problems and practical problems in professional activity in area of health protection, or in the process

of studies that envisages realization of researches and / or realization of innovations and is characterized a complexity and vagueness of terms and requirements;

- *General*: Ability to apply knowledge in the practical situations, knowledge and understanding of subject domain and understanding of profession, capacity for realization of self-regulation, conducting of healthy way of life, capacity for adaptation and action at a new situation, capacity for the choice of strategy of communication; ability to work in a command; skills of interpersonal cooperation, ability to communicate the native language both orally, and in writing; ability to communicate the second language, skills of the use of information and communication technologies, capacity for abstract thought, analysis and synthesis, ability to study and be modernly taught, ability to apply knowledge in practical situations, ability to estimate and provide quality of executable works, definiteness and persistence in relation to the put tasks and taken duties, ability to operate socially responsible and public consciousness, aspiring to environmental preservation.
- *Special (professional)*: the ability to assess the impact of the environment, socio-economic and biological determinants on the health of an individual, family, population; ability to plan and carry out sanitary and hygienic and preventive measures.

The study of this discipline forms in students of *social skills*:

- communicativeness (implemented through the method of working in groups and brainstorming during the analysis of conditions of situational tasks and cases, the method of presenting the results of independent work and their defence in the group);
- teamwork (implemented through group work method and brainstorming during the analysis of conditions of situational tasks and cases);
- conflict management (implemented through group work method and brainstorming, business games);
- time management (implemented through the method of self-organization during classroom work in groups and independent work);
- leadership skills (implemented through the method of presenting the results of independent work and their defense in the group).

**Discipline status: basic**, discipline format - mixed: has support in the Moodle system, teaching the discipline involves a combination of traditional forms of classroom learning with elements of distance learning, which uses available interactive information technology (ZOOM, Moodle, Google Meet), face-to-face and distance counseling.

**Teaching methods.** Electronic-informational (presentations, video materials, methodical recommendations, lectures), scientific (participation in scientific developments in the discipline), control (tests, situational tasks, assessment of practical skills) are used for conducting classes.

**Learning outcomes.** As a result of studying the discipline the student must **know**: influence of factors of environment on the state of health of different groups of population; methods of hygienic estimation of influence of factors of environment on a health population; laws of hygienic science and general conformities to law of connection of health with factors and terms of environment of vital functions of man;

bases of prophylaxis of diseases of infectious and noninfectious origin; facilities of healthy way of life and basis of the personal hygiene; methodology of realization of preventive and current sanitary supervision; principles of organization and realization of prophylactic measures, in connection with development of territorial, administrative and productive units; principles of organization and realization of prophylactic measures in accordance with bases of current legislation of Ukraine.

**be able to:** conduct the analysis of the state of environment and influence of his factors on a health different groups of population; set by means of methods of hygienic estimation influence of factors of environment on a health population; interpret the basic laws of hygienic science and set general conformities to law of connection of health with the factors of environment and terms of vital functions of man; ground hygienic measures on the prophylaxis of diseases of infectious origin; plan measures on the observance of healthy way of life, personal hygiene and inculcate them in practice of health protection; plan organizational and substantial measures in relation to a preventive and current sanitary supervision; co-ordinate the plans of realization of prophylactic measures with the plans of development of territorial, administrative and productive units; analyze the state of environment on the basis of integral criteria of estimation of the state of health of population; ground realization of prophylactic measures in accordance with bases of current legislation of Ukraine; plan the measures of organization of the medical providing in the extreme conditions.

**The content of the discipline**  
Curriculum of the discipline

Names of sections of the discipline and topics	Number of hours			
	<i>Total</i>	<i>L</i>	<i>PC</i>	<i>IW</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b><i>Part of discipline 1. Introduction of hygiene and ecology. Hygienic value of environment and methods of his research.</i></b>				
Hygiene and ecology as a branch of medical science and health care, its objective, tasks, content. Preventive direction of Ukrainian medicine, public and individual prevention; primary, secondary and tertiary prevention; main priorities. Significance of hygienic knowledge for formation of practical activity of different doctors.	2	2		
Environment and human health. Biosphere and its structure. Influence of environment to human health. Hygiene of atmosphere air. Natural chemical content of atmosphere air. Solar radiation, its hygienic significance. Hygienic significance of weather and climate. Acclimatization, it's peculiarities in different climate zones.	2	2		
Water as the health factor, its physiological, hygienic and epidemiological significance. Importance of the water and for the infectious and parasitical diseases spreading. Water as an etiological factor of non-infectious diseases. Hygienic requirements to the drinking water quality Organization of the drinking water supply. Ecological problems and sanitary protection of water sources.	2	2		
Introductory lesson. Place and significance of hygiene for the medical knowledge and doctor's practical activity. Methods of hygienic researches.	2		2	
Hygienic significance of the solar radiation. Methods of determination of the ultraviolet radiation intensity and preventive dose, application of the ultraviolet radiation for the air sanitation and diseases prevention. Methods of determination and hygienic assessment of natural and artificial lighting in different premises	2		2	
Method of determination and hygienic assessment of the temperature and humidity regimen, the air movement. Method of hygienic assessment of the microclimate parameters complex effect on the human heat exchange.	2		2	
Methods of hygienic assessment of drinking water according to results of organoleptical and physical analyses. Method of hygienic assessment of drinking water according to salt content and content of fluorine. Prophylaxis of fluorosis and caries.	2		2	
Methods of hygienic assessment of the drinking water based on results of the laboratory analysis of samples	2		2	
Use of ultraviolet radiation in dentistry (for air sanitation in premises of dental clinic, for disinfection of dental tools and at use of photo-polymerous lamps)	4			4
Hygienic estimation of climate and weather conditions and their influence on human health. Sanitary protection and biosafety of atmospheric air	4			4
Endemic goiter as a sanitary problem, its etiology and prevention	4			4
Preparation for practical training - theoretical training and practical skills development.	6			6
<b>Totally in part 1</b>	<b>34</b>	<b>6</b>	<b>10</b>	<b>18</b>

<b><i>Part of discipline 2. Hygienic Basics of Nutrition</i></b>				
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Hygiene of nutrition. Significance of nutrition for health and physical development. Concept of the organism nutritional status. Theories of nutrition, functions of meal. Scientific basics of rational, preventive, medical, diet nutrition. Norms of physiological requirements in nutrients and energy for the different population groups. Alimentary diseases, their classification and prophylaxis. Genetically modified products, their hygienic characteristic.	2	2		
Method of assessment of the human nutritional status, human requirements in nutrients and energy. Methods of assessment of the nutrition adequacy according to the menu-schedule	2		2	
Methods of medical control on the organism provision with vitamins	2		2	
Method of the food poisoning cases investigation	2		2	
Alimentary prophylactic of main dental diseases	4			4
Hygienic problems of nutrition in conditions of polluted environment and hazardous industry	4			4
Preparation for practical training - theoretical training and practical skills development.	4			4
<b>Totally in part 2</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>12</b>
<b><i>Part of discipline 3. The hygienic foundations of the healthy development of children and adolescents, the activities of medical and preventive institutions, labor protection in medicine, the hygienic foundations of hygiene of extreme conditions.</i></b>				
Hygiene of patient care institutions, their planning and equipment. Modern problems of the hospital building. Hygienic measures for optimization of the patient stay in medical institutions. Prevention of the hospital infection. Hygiene of dentist labour.	2	2		
Patterns of the child organism growth and development. Methods of study and hygienic estimation of physical development of children and adolescents.	2		2	
Hygienic assessment of the planning and location of dentist clinics according to the project materials.	2		2	
Methods of hygienic inspection of the planning and equipment of dentist clinic	2		2	
Hygienic assessment of the conditions of dentist' labour. Prophylaxis of hospital infections.	2		2	
Methods and means of radiation control and antiradiation protection for medical personnel and patients. Hygienic inspection of the planning and equipment of X-ray room.	2		2	
Basis of organization and medical control of water supply and nutrition in extreme conditions. Sanitary supervision of water supply sources in extreme conditions.	2		2	
Differential credit. Control of the theoretical training and mastering of practical skills	2		2	
Features of composite, complex and connective action of harmful substances on organism (including work in prosthetic dental laboratory)	4			4
Organizing of sanitary and anti-epidemic regimen in dental clinic	4			4
Preventing of emotional burnout syndrome for doctors	4			4



<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Preparation for practical training - theoretical training and practical skills development.	4			4
Preparation for the final control of mastering the discipline "Hygiene and Ecology"	4			4
<b>Totally in part 3</b>	<b>36</b>	<b>2</b>	<b>14</b>	<b>20</b>
<b>Total hours of discipline</b>	<b>90</b>	<b>10</b>	<b>30</b>	<b>50</b>

### **Topics of lectures**

#### **Part of discipline 1. Introduction of hygiene and ecology. Hygienic value of environment and methods of his research**

Lecture 1. Hygiene and ecology as a branch of medical science and health care, its objective, tasks, content. Preventive direction of Ukrainian medicine, public and individual prevention; primary, secondary and tertiary prevention; main priorities. Significance of hygienic knowledge for formation of practical activity of different doctors.

Lecture 2. Environment and human health. Biosphere and its structure. Influence of environment to human health. Hygiene of atmosphere air. Natural chemical content of atmosphere air. Solar radiation, its hygienic significance. Hygienic significance of weather and climate. Acclimatization, its peculiarities in different climate zones.

Lecture 3. Water as the health factor, its physiological, hygienic and epidemiological significance. Importance of the water and for the infectious and parasitical diseases spreading. Water as an etiological factor of non-infectious diseases. Hygienic requirements to the drinking water quality Organization of the drinking water supply. Ecological problems and sanitary protection of water sources.

#### **Part of discipline 2. Hygienic Basics of Nutrition.**

Lecture 1. Hygiene of nutrition. Significance of nutrition for health and physical development. Concept of the organism nutritional status. Theories of nutrition, functions of meal. Scientific basics of rational, preventive, medical, diet nutrition. Norms of physiological requirements in nutrients and energy for the different population groups. Alimentary diseases, their classification and prophylaxis. Genetically modified products, their hygienic characteristic.

#### **Part of discipline 3. The hygienic foundations of the healthy development of children and adolescents, the activities of medical and preventive institutions, labor protection in medicine, the hygienic foundations of hygiene of extreme conditions.**

Lecture 1. Hygiene of patient care institutions, their planning and equipment. Modern problems of the hospital building. Hygienic measures for optimization of the patient stay in medical institutions. Prevention of the hospital infection. Hygiene of dentist labour.

### **Topics of practical classes**

#### **Part of discipline 1. Introduction of hygiene and ecology. Hygienic value of environment and methods of his research**

*Topic 1. Introductory lesson. Place and significance of hygiene for the medical knowledge and doctor's practical activity. Methods of hygienic researches.*

Conception and content of hygiene. Place and significance of hygiene for the medical knowledge and doctor's practical activity. Classification of methods used in hygiene. Methods of studying of the objects of the environment, their essence. Methods of studying the organism responses, their essence. The epidemiological methods used in hygiene. Experimental methods, their kinds. Sanitary-statistical methods used in hygiene. The method of sanitary inspection and description of the object of sanitary supervision.

*Topic 2. Hygienic significance of the solar radiation. Methods of determination of the ultraviolet radiation intensity and preventive dose, application of the ultraviolet radiation for the air*

***sanation and diseases prevention. Methods of determination and hygienic assessment of natural and artificial lighting in different premises.***

Hygienic characteristic of solar radiation. Hygienic characteristic of UV radiation. Diseases connected with the insufficiency of UV radiation and their prophylaxis. Diseases connected with surplus of UV radiation and their prophylaxis. The method of measuring of UV radiation. Measurement devices. Erythematous, physiological and prophylactic doses of UV radiation. The method of determination of erythemal dose of UV radiation with the help of Gorbachov's biodosemeter. Hygienic requirements to natural lighting. Factors which exert of influence on the natural lighting. The methods of determination of natural lighting. Indices of natural lighting, the method of their determination and hygienic standards for different rooms. Hygienic requirements to artificial lighting. Sources of artificial lighting and their hygienic characteristic. Systems of artificial lighting. Methods of measurement of artificial lighting.

***Topic 3. Method of determination and hygienic assessment of the temperature and humidity regimen, the air movement. Method of hygienic assessment of the microclimate parameters complex effect on the human heat exchange.***

Kinds of the microclimate and the factors, forming the microclimate. The mechanism of thermoregulation in the human organism and ways of heat transfer. Influence of high and low temperature of the environment on the human organism. Prophylaxis of low and high temperature affects on the human organism. The rules for measuring air temperature indoors. The kinds of air humidity. The method of measuring relative air humidity. Prophylaxis of low and high humidity affects on the human organism. Influence of high and low temperature with high humidity on the human organism. Physiological and hygienic significance of atmospheric pressure. High and low atmospheric pressure, its influence on the human organism. The method of measurement of atmospheric pressure. Physiological and hygienic significance of air movement. The methods of measurement of air velocity indoors and outdoors. Physiological principles of the heat exchange in the human being and its connection to the microclimate of the environment. Complex influence of physical factors of the atmospheric air on the heat exchange in the human being. The influence of the cooling and the heating microclimate and its influence on the human organism. Conditions that cause the cooling or the heating. General methods of hygienic study and estimation of the microclimate in the rooms.

***Topic 4. Methods of hygienic assessment of drinking water according to results of organoleptical and physical analyses. Method of hygienic assessment of drinking water according to salt content and content of fluorine. Prophylaxis of fluorosis and caries***

Physiological, hygienic and domestic significance of mineral composition of water. Indices characterizing mineral composition of water, their hygienic standards for centralized and local water-supply. Kinds of water hardness. The method of general water hardness determination. Influence of microelement composition of drinking water on human health. Physiological, hygienic and pathogenic significance of fluorine. Hygienic standards of fluorine. The method of determination of fluorine in drinking water. Diseases connected with fluorine content in water and their prophylaxis.

***Topic 5. Methods of hygienic assessment of the drinking water based on results of the laboratory analysis of samples.***

Classification of water sources in nature. Hygienic characteristic of open (superficial) sources of water-supply. Hygienic characteristic of underground sources of water-supply. The hygienic value and procedure of sanitary-topographical inspection and description of sources of water-supply. Systems of water supply and their hygienic characteristic. Basic hygienic requirements to good quality drinkable water. Documents, which regulate of water quality. Physiological, hygienic, endemic and epidemiological significance of water. Organoleptical properties of water, hygienic standards and methods of their determination. Physical properties of water, hygienic standards and methods of their determination. Chemical indices of water pollution and their hygienic standards. Bacteriological indices of drinking water quality. The methods of drinking water quality improvement. Hygienic requirement to the wells. Hygienic requirements to drinking water quality for centralized and decentralized water supply.

**Part of discipline 2. Hygienic Basics of Nutrition.**

***Topic 1. Method of assessment of the human nutritional status, human requirements in nutrients and energy. Methods of assessment of the nutrition adequacy according to the menu-schedule.***

Biological essence of nutrition. Classification of food nutrients and food products. Types of nutrition. Hygienic requirements to rational nutrition. The essence of the laws of quantitative and qualitative adequacy. The main components of human power inputs. Principles of forming of different groups of population by needs in calories and nutrients. Proteins in nutrition, their physiological functions and daily need. Fats in nutrition, their physiological functions and daily need. Carbohydrates in nutrition, their physiological functions and daily need. Physiological functions and hygienic standard of vitamins. Hygienic requirements to a menu for a week. The main criteria of qualitative variety of nutrition in a menu for a week.

***Topic 2. Methods of medical control on the organism provision with vitamins.***

The physiological role of vitamins and hygienic norms in daily ration. Main food sources of vitamins in nutrition. Etiology, pathogenesis, clinical picture of avitaminosis and hypovitaminosis C. The methods of vitamin C sufficiency control in the human organism. The method of vitamin C determination in urine (by Thilman's reagent). The methods of prophylaxis of avitaminosis and hypovitaminosis C.

***Topic 3. Method of the food poisoning cases investigation.***

The notion of food poisonings and their classification. The main features of food poisoning. The causes of food toxic infections. The sanitary and epidemiological character of toxicoinfections and their prophylaxis. The sanitary and epidemiological character of food toxicoinfections which are caused by spore-producing microorganisms and their prophylaxis. The sanitary and epidemiological character of staphylococcus toxicoses and their prophylaxis. The sanitary and epidemiological character of botulism and its prophylaxis. Mycotoxicosis, their classification and prophylaxis. The poisonings by poisonous plants and animal tissues. The poisonings by the products of the plants and animal tissues which are poisoned in certain conditions. The poisonings with chemical substances. The poisonings of non-identified origin. The measurements for prophylaxis of food poisonings of microbial and non-microbial nature.

**Part of discipline 3. The hygienic foundations of the healthy development of children and adolescents, the activities of medical and preventive institutions, labor protection in medicine, the hygienic foundations of hygiene of extreme conditions.**

***Topic 1. Patterns of the child organism growth and development. Methods of study and hygienic estimation of physical development of children and adolescents.***

The methods of studying of physical development of children and teenagers. The methods of measurement of stature (upright and sitting) and weight in children and teenagers; the instruments used for these measurements. The methods of measurement of circumference of the thorax, head, abdomen, etc; the instruments used for these purposes. The methods of measurement of muscular force in the hands and trunk. The methods of determination of somatoscopic parameters of the body. The methods of estimation of children's' and teenagers' physical development. Essence of the "signal deviation" method. Essence of the graphical method. Essence of the method of "regression scale" by stature. Essence of the complex method of estimation of physical development. Groups of health of children and teenagers. Groups of physical development of children and teenagers.

***Topic 2. Hygienic assessment of the location and planning of dental clinic according to the project materials.***

Hygienic requirements to the placement of medical preventive establishments on the territory of city. Specific of location of dental clinic in settlement. Hygienic characteristic of the various systems of hospital planning. Hygienic requirements to the general plan of a hospital. Functional zones at the hospital area. Hygienic requirements to internal design of a dental clinic.

***Topic 3. Hygienic assessment of the internal design of dental clinic according to the project materials.***

The main principle of the design of different departments in dental clinic. Hygienic

requirements to the medical rooms of the dental clinic. Peculiarities of internal design and hygienic regimen in department of preventive dentistry. Peculiarities of internal design and hygienic regimen in department of operative dentistry. Peculiarities of internal design and hygienic regimen in department of prosthetic dentistry. Hygienic requirements of the ward of a hospital.

***Topic 4. Method of hygienic inspection of the planning and equipment of dentist clinic Hygienic assessment of the conditions of dentist' labour.***

Hygienic requirements of the microclimate in a hospital. Hygienic requirements of natural and artificial lighting in hospital wards and other medical rooms. Hygienic characteristic of dentist labor. Main harmful and dangerous factors including factors of physical, chemical, biological, psycho-physiological nature which affect health of medical personnel in different departments of dental clinic. Prophylaxis of negative influence of unfavorable conditions and work factors on the dentist organism. The general and specific hygienic actions for prevention of occupational diseases. Prophylactic of hospital infections.

***Topic 5. Methods and means of radiation control and antiradiation protection for medical personnel and patients. Hygienic inspection of the planning and equipment of X-ray room.***

The basic aspects of radiation monitoring in radiological departments and X-ray room. Characteristics of radiological hazards in X-ray diagnostic room and conditions it depends on. Ways of decreasing the radiation exposure of personnel and patients of patient care institutions. Sanitary and technical equipment of X-ray room. The main principles of radiation asepsis. The basic principles of radiation protection of the personnel of medical establishments at work with "close" sources of ionizing radiations. The procedure of sanitary-hygienic inspection of X-ray room.

***Topic 6. Basis of organization and medical control of water supply and nutrition in extreme conditions. Sanitary supervision of water supply sources in extreme conditions.***

The services of rescue and non-governmental units, which select water supply sources and name the instruments they use to make examination of water supply sources. Water supply quantitative rates for the units in field conditions; specify their dependence upon climatic conditions and emergency situations. Peculiarities for drinking water standards during emergency situations. Characteristic of sanitary-epidemiologic survey of water supply sources. Characteristic of sanitary-topographic survey of water supply sources. Characteristic of sanitary-technical survey of water supply sources. Characteristic of organoleptic, physicochemical, bacteriological and other indices of drinking water quality and water quality from water reservoirs.

***Topic 7. Differential credit. Control of the theoretical training and mastering of practical skills.***

Concluding session is made after study of all subparts of discipline, consisting of a set of educational elements of the work program that combines all types of training (theoretical, practical, independent work), elements of educational and professional programs implemented by the relevant educational process.

The department offers the following methods of conducting the final lesson, which is approved in the Work-study program of the course: a) solution of MCQ tests on the content of the training materials that includes basic tests of disciplines that cover all content of educational material according to Work-study program of the course in the amount 30 tests. Department proposes two variants of passing this test test cards – in computer class of department using electronic version on Moodle platform or, by the absence of technical ability, using paper variant. Estimation criterion: 95-100 % of right solved tests; assessment: “passed” – “not passed”; b) working-off practical skills (estimation criterion: “fulfilled” or “not fulfilled”; c) evaluation of students’ knowledge of theoretical issues included in the final test by test cards that include all problems of discipline (3 questions). For each answer student gets from 16 up to 27 marks. Total number of mark for differential credit lesson is from 50 up to 80.

## **Topics of independent work.**

### **Part of discipline 1. Introduction of hygiene and ecology. Hygienic value of environment and methods of his research**

**Topic 1.** Use of ultraviolet radiation in dentistry (for air sanitation in premises of dental clinic, for disinfection of dental tools and at use of photo-polymerous lamps).

**Topic 2.** Hygienic estimation of climate and weather conditions and their influence on human health. Sanitary protection and biosafety of atmospheric air.

**Topic 3.** Endemic goiter as a sanitary problem, its etiology and prevention.

### **Part of discipline 2. Hygienic Basics of Nutrition.**

**Topic 1.** Alimentary prophylactic of main dental diseases.

**Topic 2.** Hygienic problems of nutrition in conditions of polluted environment and hazardous industry.

### **Part of discipline 3. The hygienic foundations of the healthy development of children and adolescents, the activities of medical and preventive institutions, labor protection in medicine, the hygienic foundations of hygiene of extreme conditions.**

**Topic 1.** Features of composite, complex and connective action of harmful substances on organism (including work in prosthetic dental laboratory).

**Topic 2.** Organizing of sanitary and anti-epidemic regimen in dental clinic.

**Topic 3.** Preventing of emotional burnout syndrome for doctors

## **Recommended reading**

### **Basic literature**

1. Hygiene and Ecology. Special Questions of Hygiene and Ecology : навч.-метод. посіб. [за заг. ред. Власика Л. І.] Чернівці : Медуніверситет, 2019. 201 с.
2. Hygiene and Ecology : підруч. [за ред. В. Г. Бардова ] Вінниця : Нова Книга, 2018. 685 с.
3. Hygiene and Preventive medicine (manual for the students of dentistry faculties). Nadvorniy M.M., Vorokhta Y., Nadvorna O.M., Lototska O.V. and other authors. Odessa Press-courier, 2011. –288 p.
4. Kozak D.V., Sopol O.N., Lototska O.V. General Hygiene and Ecology. Ternopil: TSMU, 2008. 248 p.
5. Hygiene and ecology / V.A.Korobchanskiy, M.V.Vorontsov, A.A.Musulbas. – Kontrast Publishing Enterprise, Kharkov, 2006. – P.131-148.
6. Abstracts of lectures.

### **Extra literature**

7. Environmental Health Practitioner Manual / Commonwealth of Australia 2010. 310 p.
8. Natural Hygiene Handbook / James M. Lennon; TrueNorth Health Center. 2021. 254 p.
9. Hygiene and Safety: The Hospitality Industry Handbook 2nd ed./ Gordan Davis L. Juta 2011. 287 p.
10. Handbook of Occupational Safety and Health 3rd ed./ Edited by S.Z.Mansdorf. Waley, 2019. 752 p.
11. Selected Lectures on Nutrition / Dyachenko A. Sumy: Sumy State University Publishing House. - Pt. IV-V: Nutrition in Diseases. 204 p.
12. Nutrition: Principles and Application in Health Promotion / Suitor, C. W. J. B. Lippincott Co. 468 p.

## **Discipline policy and values.**

In order to successfully complete the relevant course, it is necessary to regularly attend practical classes; to have theoretical preparation for practical classes according to the subject; not to be late and not to miss classes; perform all necessary tasks and work in each lesson; be able to work with

a partner or in a group; to address to teachers of a course on various questions on subjects of employment and to receive it when you need it.

Students can discuss different tasks, but their performance is strictly individual. It is not allowed to write off, use various software, tips, use a mobile phone, tablet or other electronic gadgets during classes for purposes other than the educational process. Students are not allowed to be late for practical classes.

Students with special needs can meet with the teacher or warn him before the start of classes, at the request of the student it can be done by the head of the group. If you have any questions, please contact the teacher.

Students' participation in research and conferences on this topic is encouraged.

All students of KhNMU are protected by the Regulations on Prevention, Prevention and Settlement of Cases Related to Sexual Harassment and Discrimination at Kharkiv National Medical University, designed to define an effective mechanism for resolving conflict situations related to discrimination and sexual harassment. This Regulation is developed on the basis of the following normative legal acts of Ukraine: the Constitution of Ukraine; Law of Ukraine "On Education"; Law of Ukraine "On Higher Education"; Law of Ukraine "On Principles of Preventing and Combating Discrimination in Ukraine"; Law of Ukraine "On Ensuring Equal Rights and Opportunities for Women and Men"; Convention for the Protection of Human Rights and Fundamental Freedoms; Convention for the Suppression of Discrimination in Education; Convention on the Elimination of All Forms of Discrimination against Women; General Recommendation № 25 to paragraph 1 of Article 4 of the Convention on the Elimination of All Forms of Discrimination against Women; Cultural Rights; UN Committee on Economic, Social and Cultural Rights); Recommendations on education in the spirit of international understanding, cooperation and peace and education in the spirit of respect for human rights and fundamental freedoms (UNESCO); The concept of the State social program to ensure equal rights and opportunities for women and men for the period up to 2021. Kharkiv National Medical University provides education and work that is free from discrimination, sexual harassment, intimidation or exploitation. The University recognizes the importance of confidentiality. All persons responsible for the implementation of this policy (staff of deans' offices, faculties, institutes and the Center for Gender Education, members of the student government and ethics committee, vice-rector for research and teaching) are confidential about those who report or accuse of discrimination. or sexual harassment (except when the law requires disclosure of information and / or when disclosure by the University is necessary to protect the safety of others).

KhNMU creates a space of equal opportunities free from discrimination of any national, racial or ethnic origin, sex, age, disability, religion, sexual orientation, gender, or marital status. All rights, privileges, programs and activities granted to students or staff of the University apply to all without exception, provided they are properly qualified. The anti-discrimination policy and the policy of counteracting sexual harassment of KhNMU are confirmed by the Code of Corporate Ethics and the Charter of KhNMU.

### ***Behavior in the audience***

It is important for students to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and are not fundamentally different from the generally accepted norms.

During classes it is allowed:

- leave the audience for a short time if necessary and with the permission of the teacher;
- drink soft drinks;
- take photos of presentation slides;
- take an active part in the class

Forbidden:

- eat (except for persons whose special medical condition requires another - in this case, medical confirmation is required);
- smoking, drinking alcohol and even low-alcohol beverages or drugs;

- use obscene language or use words that offend the honor and dignity of colleagues and faculty;
- gambling;
- damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter the premises and territories);
- shouting, shouting or listening to loud music in classrooms and even in corridors during classes.

### ***Plagiarism and academic integrity***

The Department of Hygiene and Ecology No 1 maintains zero tolerance for plagiarism. Male and female students are expected to constantly raise their awareness of academic writing. The first lessons will provide information on what to consider plagiarism and how to properly conduct research and scientific research.

### ***Occupational Health***

The first lesson of the course will explain the basic principles of labor protection by conducting appropriate training. It is expected that everyone should know where the nearest evacuation exit to the audience, where the fire extinguisher is, how to use it, and so on.

**The procedure for informing about changes in the syllabus:** the necessary changes in the syllabus are approved by the methodical commission of KhNMU on the problems of Public Health and published on the site of KhNMU, the site of the Department of Hygiene and Ecology No 1 of KhNMU.

### ***Evaluation policy***

#### ***Assessment of current educational activities (CEA)***

##### *Criteria for evaluating current learning activities:*

The grade "EXCELLENT" is given to a student who took an active part in discussing the most difficult questions on the topic of the lesson, gave at least 90% correct answers to standardized test tasks, solved situational problems without mistakes, performed practical work, drew up a protocol, fully substantiated the results.

A grade of "GOOD" is given to a student who took part in the discussion of the most difficult questions on the topic of the lesson, gave at least 75% correct answers to standardized test tasks, made some minor mistakes in solving situational problems, did practical work and drew up a protocol, but not fully substantiated the obtained data.

The grade "SATISFACTORY" is given to a student who did not take part in the discussion of the most difficult questions on the topic, gave at least 60% correct answers to standardized test tasks, made significant mistakes in answering written tasks, solves situational problems, performed practical work and drew up a report, but did not fully substantiate the data obtained.

The grade "UNSATISFACTORY" is given to a student who did not take part in the discussion of the most difficult questions on the topic, gave less than 60% of correct answers to standardized test tasks, made gross mistakes in answering written tasks or did not answer them at all, did not do practical work and did not draw up a protocol, can not interpret its results.

During the assessment of mastering each subject of the discipline (CEA) and the differential credit on final lesson (DC) the student is graded according to the traditional 4-point system: "excellent", "good", "satisfactory" and "unsatisfactory".

Assessment of the differential credit: 1) solving basic test tasks, which cover the content of the educational material of the final lesson (90.5% of correctly solved tasks); 2) assessment of the acquisition of practical skills (assessment criteria - "performed" or "failed"); 3) the decision of the theoretical questions which are a part of the given DC (the traditional estimation is exposed).

Assessment of students' independent work: mastering the topics that are submitted only for independent work is checked during the differential credit.

Assessment of individual tasks of the student: points for individual tasks are accrued to the student only once as a commission (commission - head of the department, head teacher, group teacher) only if they are successfully completed and defended. In no case may the total amount of points for IPA exceed 120 points.

The final score for CEA and DC is defined as the arithmetic mean of traditional grades for each lesson and DC, rounded to 2 decimal places and converted into a multi-point scale according to Table 1.

Table 1

**Recalculation of the average score for current activities in a multi-point scale**

4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale
5	120	4.45-4,49	107	3.91-3,94	94	3.37-3,4	81
4.95-4,99	119	4.41-4,44	106	3.87-3,9	93	3.33- 3,36	80
4.91-4,94	118	4.37-4,4	105	3.83- 3,86	92	3.29-3,32	79
4.87-4,9	117	4.33-4,36	104	3.79- 3,82	91	3.25-3,28	78
4.83-4,86	116	4.29-4,32	103	3.74-3,78	90	3.21-3,24	77
4.79-4,82	115	4.25- 4,28	102	3.7- 3,73	89	3.18-3,2	76
4.75-4,78	114	4.2- 4,24	101	3.66- 3,69	88	3.15- 3,17	75
4.7-4,74	113	4.16- 4,19	100	3.62- 3,65	87	3.13- 3,14	74
4.66-4,69	112	4.12- 4,15	99	3.58-3,61	86	3.1- 3,12	73
4.62-4,65	111	4.08- 4,11	98	3.54- 3,57	85	3.07- 3,09	72
4.58-4,61	110	4.04- 4,07	97	3.49- 3,53	84	3.04-3,06	71
4.54-4,57	109	3.99-4,03	96	3.45-3,48	83	3.0-3,03	70
4.5-4,53	108	3.95- 3,98	95	3.41-3,44	82	Less 3	Not enough

***Conducting and evaluating differential credit***

For admission to differential credit, a student must receive from 70 to 120 points. In the absence of classroom absences and unsatisfactory grades, Classroom absences and “unsatisfactory” grades must be completed without fail.

DC is carried out by the teacher of the academic group at the last lesson in the discipline. The admission to the DC is determined in points of CEA, namely: min - 70, max - 120 points. Directly DC is estimated from - 50 to - 80 points (criteria in table 2). The grade for the discipline is the sum of points for CEA and DC in points from min - 120 to max - 200 and corresponds to the national scale and the ECTS scale

For students who took part in scientific work of department (participation in conferences, preparation of presentation, analytical review) commission of teachers assigns additional mark (not more than 10).

Evaluation of theoretical knowledge, if practical skills are assessed according to the criteria "fulfilled", "did not fulfill".

Table 2

**Criteria for assessing theoretical knowledge**

Question s/points	«5»	«4»	«3»	Oral answer for card' question that includes the theoretical part of the discipline	For each answer, the student receives from 17 to 27 points, which corresponds to: "5" - 27 points; "4" - 22 points; "3" - 17 points.
1 theor.	27	22	17		
2 theor..	27	22	17		
3 task	26	21	16		

The grade "EXCELLENT" is given to a student who has given thorough complete answers to all theoretical questions, solved situational problems without errors. During the differential credit the student demonstrates a comprehensive and deep mastering of the curriculum in all sections; has full theoretical knowledge and practical skills; understands the general biological and medical significance



of the discipline, its connection with professionally-oriented disciplines; mastered the basic and additional educational literature, lecture course.

The grade "GOOD" is given to a student who gave complete answers to all theoretical questions with minor errors, made some minor mistakes in solving situational problems. During the differential credit, the student demonstrates full mastery of the curriculum in all sections; has good theoretical knowledge and practical skills; understands the general biological and medical significance of the discipline, its connection with professionally-oriented disciplines; mastered the basic educational literature and lecture course.

A grade of "SATISFACTORY" is given to a student who has not fully answered theoretical questions or made significant mistakes; made significant mistakes in solving situational problems. During the differential credit the student demonstrates mastering only the basics of the curriculum; mastered not all practical skills; cannot independently explain the connection of hygiene and ecology with other professionally-oriented disciplines; not fully mastered the educational literature and lecture course.

The grade "UNSATISFACTORY" is given to a student who made essential mistakes in answering theoretical questions or did not answer them at all; answers to situational problems. During the differential credit the student demonstrates a lack of systematic knowledge and skills, has no practical skills, makes fundamental mistakes in answering theoretical questions and in solving situational problems, has not mastered the basic literature and lecture course.

#### **Discipline assessment technology**

Evaluation of the results of the study of disciplines is carried out directly during tests, answer for questions in differential credit. The grade for the discipline is determined as the sum of points on the CEA and the differential credit and is min - 120 to max - 200. The correspondence of the grades for the 200 point scale, the four-point (national) scale and the ECTS scale is shown in Table 3.

Table 3

Compliance of marks for a 200 point scale, four-point (national) scale  
and ECTS scale

Grades for the 200 point scale	Grades for the scale ECTS	Assessment by four-point (national) scale
180–200	A	Excellent
160–179	B	Good
150–159	C	Good
130–149	D	Satisfactory
120–129	E	Satisfactory
Less than 120	F, Fx	Unsatisfactory

#### **List of questions for the differential credit.**

1. Conception and main tasks of hygiene. The main kinds of prophylaxis.
2. The role of hygiene in preservation and improvement of health and prophylaxis of diseases.
3. Classification of hygienic methods and the facilities of the research of the environment and its influence on organism and health.
4. The concept "Human environment" and its significance for health. The influence of factors of the external environment.
5. Hygienic characteristic of solar radiation. Diseases connected with insufficiency and surplus of ultraviolet radiation and their prophylaxis.
6. Physical characteristics, spectral distribution and biological effect of ultraviolet radiation. The methods of measuring of ultraviolet radiation
7. Definition of «microclimate» and factors, which influence its formation.
8. The mechanism of thermoregulation in the human organism and ways of heat transfer.
9. Kinds of the microclimate and factors of its formation.

10. Influence of the microclimate on the human organism.
11. Physical characteristics and hygienic significance of natural lighting. Influence of the external and internal factors on level of natural lighting of the premises.
12. Main harmful effects of insufficient and excessive lighting on human health and work capacity.
13. Hygienic requirements and significance of natural lighting.
14. Hygienic requirements and significance of artificial illumination in different premises. Types of artificial illumination.
15. Factors and indicators of the air pollution for indoor residence and manufacture areas.
16. Sources and indicators of communal, domestic, public and industrial air pollution, their hygienic regulations.
17. Water as a health factor. Physiological, epidemiological and hygienic significance of water.
18. Classification of water supply sources and their hygienic characteristics. Influence of water on human morbidity.
19. Basic hygienic demands of drinking water quality and hygienic importance of some of its indices.
20. Sources of water pollution. The methods of improvement of drinking water quality.
21. Characteristics of water supply systems. Main indices of water pollution and their hygienic standards.
22. Biological essence of nutrition. Classification of food nutrients and food products.
23. Types of nutrition, their hygienic character.
24. Physiological and hygienic requirements of rational nutrition.
25. Rational nutrition. Hygienic requirements to chemical composition and caloric content of the ration for different groups of population.
26. Proteins in nutrition, their physiological functions and daily need.
27. Fats in nutrition, their physiological functions and daily need.
28. Carbohydrates in nutrition, their physiological functions and daily need.
29. Classification and physiological significance of the vitamins in the organism.
30. Definition of "food poisoning" and their classification.
31. The main features of food poisoning and their prophylaxis.
32. Microbial food poisonings: sanitary-hygienic characteristic and prophylaxis.
33. Non-microbial food poisonings: sanitary-hygienic characteristic and prophylaxis.
34. Physical development of children and teenagers: methods of studying.
35. Main criteria and indices of the children and adolescents health and development. Groups of health.
36. Methods of estimation of physical development of children and teenagers.
37. Hygienic requirements of location, territory and internal design of a secondary school.
38. The main peculiarities of educational process at school.
39. Regimen of a day for children and teenagers. Principles of a day regimen planning.
40. Hygienic requirements of the placement of medical preventive establishments on the territory of city.
41. Hygienic characteristic of the various systems of planning of hospitals,
42. The main principle of the planning of a ward section.
43. Peculiarities of internal design and hygienic regimen in department of preventive dentistry.
44. Peculiarities of internal design and hygienic regimen in department of operative dentistry.
45. Peculiarities of internal design and hygienic regimen in department of prosthetic dentistry.
46. Hygienic requirements of the ward of a hospital.
47. Hygienic requirements of the microclimate in a hospital.
48. Hygienic requirements of natural and artificial lighting in hospital wards and other medical rooms.
49. Hygienic characteristic of dentist labor. Prophylaxis of negative influence of unfavorable conditions and work factors on the dentist organism.
50. Ionizing radiation as occupational hazard for personnel of hospitals

51. The basic principles of a radioactive protection of the personnel of medical establishments
52. Requirements to allocation, planning, arrangement, sanitary and technical equipment of X-ray room.
53. Water supply quantitative rates for the units in field conditions; specify their dependence upon climatic conditions and emergency situations.
54. Peculiarities for drinking water standards during emergency situations.
55. Characteristic of sanitary-epidemiologic, sanitary-topographic and sanitary-technical survey of water supply sources.