MINISTRY OF HEALTH OF UKRAINE

KHARKIV NATIONAL MEDICAL UNIVERSITY

VII FACULTY For international STUDENTS OF EDUCATION AND research INSTITUTE FOR TRAINING of international CITIZENS

**Department of Hygiene and Ecology No. 2**

**Educational program for training specialists of the second (master's)**

**level of higher education training 22 "Health care"**

**in specialty 222 "Medicine"**

Sixth year of education

SYLLABUS OF THE COURSE UNIT

**"HYGIENE AND ECOLOGY"**

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| The syllabus of the discipline is approved  at the meeting of the Department of Hygiene and Ecology № 2  Record of proceeding dated  “28” August 2020 No. 23  Acting Head of the Department  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sidorenko M.O.  (signature) (surname and initials)  " " August 2020 | Approved by the Methodical Commission of KhNMU on the Problems of Professional Training of medical and preventive profile  Record of proceeding dated  “31” August 2020 No. 12  Head  \_\_\_\_\_\_\_\_\_\_\_\_ Ognev V.A.  (signature) (surname and initials)  " " August 2020 |

***Kharkiv – 2020***

**SILABUS DEVELOPERS:**

Zavgorodniy I.V., Doctor of Medicine, Professor, Sidorenko M.O., Candidate of Medical Sciences, Associate Professor, Korobchansky P.O., Candidate of Medical Sciences, Associate Professor, Pertsev D.P., Candidate of Medical Sciences, Associate Professor, Filatova N.M., Candidate of Medical Sciences, Associate Professor, Chekhovska I.M. Sen. Teacher, Lalymenko O.S., assistant, Litovchenko O.L., assistant, Bilichenko N.P., assistant, Shevchenko Yu. V., assistant, Baidak S.M., assistant, Maryukha Yu. V., assistant

**Teachers**: Sidorenko M.O. Candidate of Medical Sciences, Associate Professor, Korobchansky P.O., Filatova N.M., Candidate of Medical Sciences, Associate Professor, Pertsev D.P., Candidate of Medical Sciences, associate professor, Chekhovska I.M., Senior teacher, Lalymenko O.S., assistant, Litovchenko O.L., assistant, Bilichenko N.P., assistant, Shevchenko Yu. V., assistant, Baidak S.M., assistant, Maryukha Yu. V., assistant

**Information about teachers**

Sydorenko M.O. - Candidate of Medical Sciences, Associate Professor of Department of Hygiene and Ecology No. 2, specialization General Hygiene.

Filatova N.M. - Candidate of Medical Sciences, Associate Professor of Department of Hygiene and Ecology No.2, specialization General Hygiene.

Korobchansky P.O. - Candidate of Medical Sciences, Associate Professor of Department of Hygiene and Ecology No. 2, specialization General Hygiene.

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Lalymenko O.S. - Candidate of Medical Sciences, Assistant of Department of Hygiene and Ecology No. 2, specialization Occupational Hygiene.

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**Intramural 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 in the conditions of the department of KhNMU

**Discipline information**

|  |  |  |
| --- | --- | --- |
| Names of indices | Field of knowledge, direction of training, educational and qualification level | Characteristics of the discipline |
| **Mixed (intramural/online) form of education** |
| Number of credits – **3** | Direction of training  **22 «Healthcare»**  (code and name) | Normative |
| Total number of hours – **90** | Specialty:  **222 «Medicine»**  (code and name) | **Year of training:** |
| 6th |
| **Semester** |
| 11–12th |
| **Lectures** |
| Hours for full-time education:  Classroom hours – **40**,  Student’s independent work– **50** | Educational qualification level:  **Specialist** | - |
| **Practical, seminar** |
| 40 hours |
| **Laboratory** |
| - |
| **Independent work** |
| 50 hours |
| **Individual tasks:** - |
| **Kind of control:** differentiated credit |

Peculiarities of the educational process in a higher education institution require from the teacher broad knowledge and skills in various fields of science and economy. The study of the discipline "Hygiene and Ecology" is aimed at acquainting students with the basics of modern social and environmental systems, the study of risk and safety factors in working conditions in higher education and other industrial activities, the algorithm of action in emergencies based on legislation acts of the labor protection management system with the use of innovative forms of student education. In addition, high school teachers in modern conditions must have the skills to compile programs to ensure professional capacity, methods of self-control in professional activities and methods of psychophysical training. Thus, the study of the discipline "Hygiene and Ecology" is relevant for the training of medical personnel, especially in the current context of reforming the system of higher education and medicine against the background of the European integration of Ukraine.

The syllabus is organized with the application of modern pedagogical principles of organization of the educational process of higher education.

Reference to the video annotation of the discipline (if available), etc.

Moodle discipline page (if available)

<http://31.128.79.157:8083/course/view.php?id=171>

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

Peculiarities of the educational process in a higher education institution require from the teacher broad knowledge and skills in various fields of science and economy. The study of the discipline "Hygiene and Ecology" is aimed at acquainting students with the basics of modern social and environmental systems, the study of risk and safety factors in working conditions in higher education and other industrial activities, the algorithm of action in emergencies based on legislation acts of the labor protection management system with the use of innovative forms of student education. Also, high school teachers in modern conditions must have the skills to compile programs to ensure professional capacity, methods of self-control in professional activities and methods of psychophysical training. Thus, the study of the discipline "Hygiene and Ecology" is relevant for the training of medical personnel, especially in the current context of reforming the system of higher education and medicine against the background of the European integration of Ukraine.

The syllabus is organized with the application of modern pedagogical principles of organization of the educational process of higher education.

The subject of the course is the forms and methods of effective management of safe activities in the social and environmental spheres, in accordance with current legislation and other regulations.

*Prerequisites*. The study of the discipline involves the prior mastering of credits in theory and practice of clinical disciplines in the context of assessing the effect of methods of diagnosis and prevention of diseases and their consequences, optimizing the patient's route, department (PHC), etc .; with epidemiology in the context of measurements of population processes and information collection plans;

*Postrequisites*. The main provisions of the discipline should be applied in the study of the disciplines of health care organization in the context of non-communicable disease statistics; social medicine in the context of measurements of population and individual health, features of registration of health-related events; medical informatics and computer technology.

**The purpose of the discipline "Hygiene and Ecology" is** to train a doctor in the specialty 22 "Health" 222 "Medicine" (approved by the order of the Ministry of Education and Science of Ukraine No. 239 dated April 16, 2003). The ultimate goals are set on the basis of OPP. On the basis of the ultimate goals for each section, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.

**The main objectives of the course**

laying the foundations:

- The use of favorable health factors of the environment to strengthen human health, harden the body;

- Students study the environment as a source of etiological factors and etiological risk factors for the occurrence and spread of diseases;

- Healthy lifestyle, disease prevention, diagnosis and differential diagnosis of diseases based on the study of the impact of environmental factors on the body and health.

● Integrated competencies:

Ability to solve typical and complex specialized problems and practical problems in a professional health care activity, or in a learning process that involves research and / or innovation and is characterized by the complexity and uncertainty of conditions and requirements.

● General competencies:

ability to abstract thinking, analysis and synthesis; ability to learn and be modernly trained; ability to apply knowledge in practical situations; knowledge and understanding of the subject area and understanding of professional activity; ability to adapt and act in a new situation; ability to make an informed decision; work in a team; interpersonal skills; ability to communicate in the state language both orally and in writing; ability to communicate in a foreign language; skills of using information and communication technologies; determination and persistence in terms of tasks and responsibilities; ability to act socially responsibly and consciously; the desire to preserve the environment.

● Professional competencies in the field of hygiene and ecology:

survey skills; ability to determine the necessary list of laboratory and instrumental studies and evaluate their results; ability to determine the necessary mode of work and rest, the nature of nutrition in the treatment of diseases; ability to plan and carry out sanitary and hygienic, preventive and anti-epidemic measures, including infectious diseases; ability to keep medical records; ability to conduct epidemiological and medical-statistical studies of public health; processing of state, social, economic and medical information; ability to assess the impact of the environment, socio-economic and biological determinants on the health of the individual, family, population.

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 clinical cases, the method of presenting the results of independent work and their defense in the group),

• Teamwork (implemented through: group work method and brainstorming during the analysis of clinical cases),

• Conflict management (implemented through: 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 protection in the group).

Discipline status: the discipline belongs to the normative (compulsory) disciplines, the format of the discipline is mixed - the discipline, which has support in the Moodle system, teaching the discipline, combines traditional forms of classroom learning with elements of distance learning, using available interactive information technology (ZOOM) , Moodle, Google meet), face-to-face and remote counseling.

**Teaching methods**. Verbal (conversation); visual (illustration, presentation material, video material); practical (independent work, work in pairs, work in groups).

**Learning outcomes**.

As a result of mastering the discipline, the applicant must demonstrate the following learning outcomes:

1. Organize actions to ensure the protection of personnel of educational or treatment-and-prophylactic institutions in order to prevent or reduce the level of probable damage;

2. Organize the provision of conditions for efficient and safe work in the workplace;

3. To control the observance of labor safety requirements by the personnel of educational or medical-preventive establishments;

4. Carry out self-regulation and lead a healthy lifestyle at home and at work.

5. Know the theoretical foundations, methods and means of studying environmental factors and their impact on the health of a healthy or sick person and public (public) health, as well as on the conditions of life, work, leisure, study, nutrition, education, treatment etc.

6. Be able to:

- To analyze the state of the environment and the impact of its factors on the health of different groups of the population. Analyze the state of the environment and the impact of its factors on the health of different groups of the population;

- demonstrate mastery of methods for hygienic assessment of the impact of environmental factors on public health, and

- To interpret the basic laws of hygienic science and the general patterns of connection of health with the factors and conditions of the living environment;

- substantiate hygienic measures for the prevention of diseases of infectious origin;

- Plan measures to maintain a healthy lifestyle, personal hygiene and implement them in health practice;

- plan organizational and substantive measures for preventive and current sanitary supervision;

- To coordinate plans for preventive measures with plans for the development of territorial, administrative and production units;

- To analyze the state of the environment on the basis of integrated criteria for assessing the state of health of the population;

Justify the implementation of preventive measures in accordance with the principles of current legislation of Ukraine.

**The content of the discipline**

Curriculum of the discipline

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | Name of content module and topic | Number of hours | | | |
| Form of education | | | |
| Total | Including | | |
| Lectures | Practical lessons | Independent work |
| **Section І.** | | | | | |
| 1. | Subject 1. Methodological and methodical fundamentals for studying a mixed effect of factors of law intensity on population’s health. | 3 | - | 2 | 1 |
| 2. | Subject 2. Hygienic assessment of a potential risk, produced by environmental factors on the human organism and health of the population. Modern mathematical forecasting methods for determining the risk of environmental factors on public health. | 3 | - | 2 | 1 |
| 3. | Subject 3. Hygienic assessment of the influence of natural and anthropogenic components of biosphere on the health of a person and of the population. | 4 | - | 2 | 2 |
| 4. | Subject 4. Hygienic importance of solar radiation and use of its components for prophylaxis of human diseases and sanation of air, water and subjects. | 4 | - | 2 | 2 |
| 5. | Subject 5. Scientific fundamentals of medical biorhytmology and chronohygiene. | 4 | - | - | 4 |
| Total on section І | | 18 | - | 8 | 10 |
| **Section II**. | | | | | |
| 6. | Subject 6. Hygiene of water and water supply of settlements. Sanitary protection of water objects. Sanitary protection of soil and purification of inhabited areas | 5 | - | 3 | 2 |
| 7. | Subject 7. Sanitary protection of atmospheric air. Hygiene in the planning of inhabited areas. Hygiene of living spaces and public buildings and constructions. | 5 | - | 3 | 2 |
| 8. | Subject 8. Hygienic importance of physical factors in conditions of inhabited areas. | 3 | - | 2 | 1 |
| 9. | Subject 9. Features of hygienic requirements to planning and maintenance of medical-preventive establishments. Features of work organization in in a pandemic. | 4 | - | 2 | 2 |
| 10 | Subject 10. Modern problems of the nosocomial infection and a complex of hygienic measures for their prophylaxis. Primary prophylaxis of HIV-infection. Prophylaxis of HIV-infection at medical establishments | 4 | - | 2 | 2 |
| 11 | Subject 11. Hygienic assessment of conditions of patients’ stay at medical-preventive establishments. Peculiarities of patients' stay and professional duties of medical workers in a pandemic | 2 | - | - | 2 |
| Total on section ІІ | | 23 | - | 12 | 11 |
| **Section III.** | | | | | |
| 12. | Subject 12. Nutrition in preventive medicine. Organization of nutrition at medical-preventive establishments and industrial enterprises Catering in health care facilities in compliance with the sanitary and anti-epidemic regime. Features of nutrition for workers in industrial enterprises. | 4 | - | 2 | 2 |
| 13. | Subject 13. Sanitary-and-hygienic control over public catering. | 4 | - | 2 | 2 |
| 14. | Subject 14. Food poisonings as a sanitary-and-hygienic problem. Technique of investigation of food poisonings. | 2 | - | - | 2 |
| Total on section ІІІ | | 10 | - | 4 | 6 |
| **Section IV.** | | | | | |
| 15. | Subject 15. Hygienic approaches to causes and development of occupational and occupationally caused morbidity. Legislative fundamentals for carrying out hygienic measures in the field of occupational medicine. Control of occupational risks. | 4 | - | 2 | 2 |
| 16. | Subject 16. Hygienic assessment of factors of the labor process and industrial environment | 4 | - | 2 | 2 |
| 17. | Subject 17. Hygiene and occupational safety of medical workers in some structural units of medical-preventive establishments. | 2 | - | - | 2 |
| Total on section ІV | | 10 | - | 4 | 6 |
| **Section V.** | | | | | |
| 18. | Subject 18. Physical development as an important criterion for assessing children and teenagers’ health | 4 | - | 2 | 2 |
| 19. | Subject 19. Eco-dependent diseases of children and teenagers | 4 | - | 2 | 2 |
| 20. | Subject 20. Hygienic principles of rational organization of physical education and labor training of children and teenagers. Scientific fundamentals for carrying out medical-professional consultation | 2 | - | - | 2 |
| Total on section V | | 10 | - | 4 | 6 |
| **Section VІ.** | | | | | |
| 21. | Subject 21. Regularities of radiation exposure formation of the person in places of residing, its hygienic assessment and ways of decrease. Radiation safety and antiradiation protection at objects with radiation-nuclear technologies. | 4 | - | 2 | 2 |
| 22. | Subject 22. Hygienic assessment of antiradiation protection of personnel and radiation safety of patients when radionuclides and other sources of ionizing radiation are used at medical-preventive establishments | 4 | - | 2 | 2 |
| 23. | Subject 23. Hygienic aspects of residing of population in territories with increased levels of radioactive pollution as a result of the Chernobyl accident | 2 | - | - | 2 |
| Total on section VІ | | 10 | - | 4 | 6 |
| **Section VІІ.** | | | | | |
| 24. | Subject 24. Organization of hygienic provision during elimination of extreme situation consequences. Features in temporary accommodation of the affected population, rescue and military formations | 4 | - | 2 | 2 |
| 25. | Subject 25. Organization of sanitary supervision over nutrition and water supply in conditions of catastrophes and during war. | 4 | - | 2 | 2 |
| 26 | Subject 26. Organization and carrying out of investigation of water supply sources in extreme situations and during war | 1 | - | - | 1 |
| Total on section VІІ | | 9 | - | 4 | 5 |
| **Total hours on discipline** | | **90** | - | **40** | **50** |

**Topics of practical lessons**

**Section of discipline 1. General issues of hygiene and ecology.**

**Topic 1. Methodological and methodical fundamentals for studying a mixed effect of factors of law intensity on population’s health.**

The value of hygiene knowledge for the formation of professional thinking and practice of physicians.

Theoretical foundations of hygiene, their essence, the contribution of domestic hygienists for their scientific substantiation and practical use.

The concept of hygiene methodology. Fundamentals of hygiene methodology: general philosophical laws and categories, their use in hygiene. Subject methodology of hygiene. Methods and techniques of hygienic research, their classification. Specific methods of hygienic research.

Methods of studying the state of the environment and its hygienic assessment. Methods of qualitative (conceptual) analysis of the state of the environment and "normalized" forecasting of changes in the level of public health by the state of air, water and soil pollution. Methods of quantitative analysis of the state of the environment.

Methods of studying the impact of the environment on human health. Population health as an integral criterion for assessing the state of the environment. The general scheme of studying the impact of a set of environmental factors on the health of the population. The general scheme of studying and assessing the relationship between environmental factors and public health.

**Topic 2. Hygienic assessment of the potential risk of environmental factors on the human body and public health. Modern mathematical forecasting methods for determining the risk of environmental factors on public health.**

Risk assessment methodology. Characteristics of the problem and basic terms. The main stages of the risk assessment methodology. Identification of harmful factor (factors). Exposure assessment. Dose-response dependence assessment. Estimation of dose-response relationship for non-carcinogens. Estimation of dose-response relationship for carcinogens. Biomarkers. Indicators of action, effect, propensity. Risk characteristics. The relationship between risk assessment and risk management. Risk management and hygienic rationing. Problems of application of risk assessment methodology in Ukraine.

**Topic 3. Hygienic assessment of the impact of natural and anthropogenic components of the biosphere on human health and population.**

Physiology of thermoregulation and human adaptation. Fundamentals of environmental hygiene. Features of the influence of natural environmental factors on public health. Methods of medical and meteorological forecasting. Methods of prevention (permanent, seasonal, urgent) of heliometeotropic reactions in healthy and sick people with various diseases. Fundamentals of balneology. Medical weather classifications. General and applied medical classifications of climate. Prevention of climatotropic reactions. Structure and organization of the service of supervision over climatic weather conditions and their forecasting.

The relationship between ecology and hygiene. Laws and methods of ecology. Ecosystems. The biosphere and its evolution. Structure and functioning of ecological systems. Biogeochemical cycles. The supporting capacity of the environment and its relationship to human population growth. Environmental factors and the denatured biosphere and their effects on human health. Ecologically dependent diseases of the population. Methods of forecasting and methods of prevention of ecologically caused exacerbations of diseases. Modern problems and tasks of environmental protection.

**Topic 4. Hygienic value of solar radiation and the use of its components for the prevention of human diseases and remediation of air, water and objects.**

Hygienic value of ultraviolet radiation and its use in medicine. Methods and devices for determining the intensity of ultraviolet radiation. Biogenic and abiogenic action of ultraviolet rays. The concept of erythema and prophylactic dose of ultraviolet radiation. Health disorders and diseases associated with deficiency and excess of ultraviolet radiation. The main symptoms of "solar starvation" and indications for preventive ultraviolet radiation. Artificial sources of ultraviolet radiation and their comparative hygienic characteristics. The use of natural and artificial ultraviolet radiation for primary and secondary prevention of various diseases in treatment and prevention, children's institutions, in the production and rehabilitation of air, water and objects.

**Topic 5. Scientific bases of medical biorhythmology and chronohygiene.**

Biological rhythms and human health. The concept of biological rhythms, classifications of the most common biological rhythms. Leading characteristics of biological rhythms. Determination of calculated biological rhythms of man. The concept of desynchronosis, types of desynchronosis. Chronohygiene as a basis for prevention of desynchronoses. Determining the type of daily working capacity. Biorhythmological principles of rational organization of daily human activity.

**Section of discipline 2. Community hygiene.**

**Topic 6. Hygiene of water and water supply of settlements. Sanitary protection of water sources. Sanitary protection of soil and cleaning of settlements.**

Hygienic indices and standards of drinking water quality (physical, organoleptic, chemical composition) and indicators of pollution (chemical, bacteriological - direct and indirect), their scientific substantiation. The concept and characteristics of centralized (drinking water supply) and decentralized (wells, catchments) water supply systems. Hygienic characteristics of generally accepted and special methods of improving water quality, technical means of their implementation at the main water supply facilities with centralized water supply systems. The scope of measures for sanitary supervision over the operation of the main structures of the water supply system (its individual elements and the water supply network), wells, catchments.

Hygienic assessment of different types of soils. Geochemical, geoendemic characteristics of soils. Sources of soil pollution in modern conditions of industrialization and chemicalization of the national economy. The impact of soil pollution on the health and sanitary living conditions of the population. The role of soil in the occurrence and spread of infectious diseases (anaerobic infections) and invasions. Soil and diseases of non-infectious etiology. Processes and indicators of soil self-cleaning. Assessment of soil sanitation according to chemical and biological indicators. Theoretical bases and methods of hygienic rationing - maximum allowable concentrations of harmful chemicals in the soil.

Principles of cleaning settlements. Systems and facilities for temporary storage, removal, disposal and utilization of solid and liquid waste of domestic and industrial origin. Liquid waste, their classification and sanitary-epidemiological significance. Sewerage of settlements, its importance in the prevention of infectious diseases. The impact of sewerage of settlements on the sanitary condition of the soil and living conditions of the population. General scheme and facilities for domestic wastewater treatment. Wastewater treatment and sanitary protection of reservoirs. Scientific bases of protection of open reservoirs. The concept of small sewers and conditions of its use. Features of collection, temporary storage, removal and disposal of waste from treatment and prevention facilities (wastewater, waste surgical, infectious and other departments).

**Topic 7. Sanitary protection of atmospheric air. Hygiene of settlement planning. Hygiene of residential and public buildings and structures.**

Atmospheric air quality assessment and methods for determining the risk and impact of air pollutants on public health. The main air pollutants in the settlements. System of measures for prevention of air pollution. Principles of hygienic regulation of air pollutants. Hygienic rationing of pollutants in the air. Impact of air pollution on public health. Methods for determining the impact of atmospheric quality on public health. Housing as a factor in shaping individual health. The main hygienically significant factors of housing and their hygienic assessment. Methods of instrumental research of the main indicators of the living environment. Prevention of diseases caused by household factors.

**Topic 8. Hygienic importance of physical factors in the conditions of settlements.**

The main sources of municipal noise and vibration in populated areas, their comparative hygienic characteristics. Impact of noise and vibration on public health. Hygienic justification of permissible noise and vibration levels.

The main sources of electromagnetic fields (EMF), their hygienic characteristics. The impact of EMF on public health. A system of measures to reduce and prevent the negative impact of noise, vibration and EMF on public health, working and leisure conditions.

**Topic 9. Hygienic requirements for the planning and operation of treatment and prevention facilities. Features of the organization of work in a pandemic.**

The main legislative and normative-methodical materials that regulate the requirements for the location and planning of treatment and prevention facilities.

Basic sanitary and hygienic requirements for planning and operation of treatment and prevention facilities and departments of therapeutic, surgical, infectious profile and specialized departments.

Definition and assessment according to construction drawings of situational and general plans of placement and zoning of the territory of the projected medical and preventive establishments taking into account objects surrounding the land plot and "wind roses", conformity to norms of percent of building, gardening, orientation of buildings.

Determination and assessment according to the plans and sections of buildings compliance with the hygienic standards of the area, volume, sanitation of hospital premises, their compliance with the functional purpose.

Topic 10. Modern problems of nosocomial infection (HII) and a set of hygienic measures for its prevention. Specific and nonspecific prevention of STIs. Anti-epidemic regime of health facilities in a pandemic.

Modern concepts of detection of nosocomial infections. Features of nosocomial infections. Basic hygienic requirements for treatment and prevention facilities in the prevention of nosocomial infections. Measures to localize nosocomial infections in hospitals of various medical profiles. Means of protection during the implementation of medical practice by the staff of medical and preventive institutions. Primary prevention of HIV infection. HIV prevention in medical institutions.

**Topic 11. Hygienic assessment of the conditions of patients and the characteristics of the working conditions of staff in treatment and prevention facilities. Peculiarities of patients' stay and professional duties of medical workers in a pandemic. (SIW)**

Basic hygienic requirements for planning, equipment, mode, operation of medical, diagnostic, auxiliary and household units of a hospital. Hygienic standards of microclimate, air environment, ventilation, natural and artificial lighting of various departments of the hospital, their importance in relation to the effectiveness of treatment of patients and working conditions of medical staff. Harmful and dangerous factors of different departments of the hospital (diagnostic, physiotherapeutic, balneological, etc.), their impact on the health of patients.

**Section of discipline 3. Hygiene of nutrition.**

**Topic 12. Nutrition in preventive medicine. Catering in health care facilities in compliance with the sanitary and anti-epidemic regime. Features of food for workers in industrial enterprises.**

Food functions and factors that provide them. Theories and concepts of nutrition. Importance in the nutritional composition of diets (proteins, fats, carbohydrates, vitamins and minerals). Basic hygienic requirements for the construction of human nutrition. Calculation of energy costs and energy value of food. Hygienic characteristics of the food set, chemical composition and energy value of therapeutic and prophylactic and therapeutic (dietary) nutrition.

**Topic 13. Sanitary and hygienic control over public catering.**

Pathogenetic principles of construction of dietary therapeutic nutrition. Classification of dietary products. List of basic diets for patients in treatment and prevention facilities. Principles of organization of dietary (medical) nutrition in hospitals and sanatoriums. Sanitary and hygienic control over the organization of dietary nutrition in the system of medical nutrition in medical and preventive institutions.

**Topic 14. Food poisoning as a hygienic problem. Methods of investigating cases of food poisoning.**

Food poisonings, their definition and classification. Food poisoning: definition, etiology, diagnosis, clinic, principles of prevention. Bacterial toxicosis: botulism, staphylococcal, their etiology, diagnosis, clinic, prevention. Mycotoxicosis, their etiology, diagnosis, clinic, prevention. Food poisoning of non-microbial nature (products that are toxic in nature; products that have acquired toxic properties under storage conditions; products contaminated with toxic substances (xenobiotics) - heavy metals, pesticides and others). Food poisoning of unknown etiology (urovsky, gaf diseases and others, hypotheses of their occurrence, features of the clinic. Methods of investigating the causes of food poisoning, participation and responsibilities of hygienists and medical physicians. Instructional and legislative documents used in the investigation of food poisoning and their prevention Preventive measures to eliminate and prevent food poisoning.

**Section of discipline 4. Occupational hygiene.**

**Topic 15. Hygienic approaches to the causes and development of occupational and occupational diseases. Legislative bases of carrying out hygienic measures in the field of occupational medicine. Occupational risk management.**

Fundamentals of Ukrainian legislation in the field of occupational health and safety. Fundamentals of medical (sanitary) supervision over working conditions at the enterprise, observance of sanitary norms and rules, prevention of occupational diseases and poisonings. Methods and means of intoxication prevention, basic criteria of hygienic standardization of chemical compounds in the air of the working area, other environments.

**Topic 16. Hygienic assessment of factors of the labor process and production environment.**

Types of work, their physiological and hygienic characteristics. Physical labor, its severity and intensity. Mental work, its intensity. Physiological changes in the body of the worker in the process of physical and mental work. Fatigue and overfatigue, explanations and scientific substantiations of their development. Modern principles and criteria of hygienic assessment of labor and its classification according to the degree of severity and intensity. Methods of research of a functional condition of an organism at mental and physical work. The system of preventive measures for the rational organization of the labor process. Psychophysiological professional selection, diagnosis of psycho-overfatigue. Physical characteristics of noise, units of its measurement. Noise classifications. The effect of noise on the hearing organ. Specific and nonspecific action of noise. Noise disease. The concept of sound comfort, noise control measures. Physical characteristics of vibration. Vibration speed and vibration acceleration. Units of measurement of vibration parameters, their spectral composition. Vibration classification. Biological action of vibration, the main symptoms of vibration disease. Measures to reduce the adverse effects of noise and vibration on the human body. Fundamentals and principles of hygienic regulation of noise and vibration.

**Topic 17. Hygiene and occupational safety of medical workers in some structural units of medical-preventive establishments.**

Hygienic significance of planning, equipment, optimal mode of operation of treatment and prevention facilities as conditions for creating safe working conditions for medical staff. Occupational hazards, hygiene and labor protection of medical staff of various departments of the hospital (surgical, therapeutic profile, infectious diseases, psychoneurological and others). Occupational hazards, hygiene and labor protection of medical staff of diagnostic, physiotherapeutic, balneological, resuscitation and other specific departments and laboratories of the hospital. Legislative and organizational measures for the protection of health workers. Personal hygiene of medical staff in the health care system and ensuring favorable working conditions and prevention of nosocomial infections and occupational diseases.

**Section of discipline 5. Pediatric hygiene.**

**Topic 18. Physical development as an important criterion for assessing the health of children and teenagers.**

Leading environmental factors and social conditions that affect the health of children and adolescents. The main patterns of growth and development and features of the morphofunctional state of children and adolescents. Methods for assessing the health and physical development of children and adolescents and criteria for their division into health groups. Determination of health groups, somatometric, somatoscopic and physiometric indices of physical development of children and adolescents. Assessment of physical development of children and adolescents.

**Topic 19. Eco-dependent diseases of children and teenagers.**

Features of the main factors and conditions of the environment and the educational process that affect the health of children and adolescents. Diseases caused by environmental factors and the educational process. Hygienic requirements for the land plot and the building of educational institutions and establishments, for planning and sanitary improvement (microclimatic parameters, lighting, ventilation, water supply, etc.) of the classroom and school classroom. Hygienic requirements for the design and parameters of educational furniture, ensuring the optimal physiological fit of students. Preventive recommendations for improving the organization of the educational process at school and sanitary and hygienic conditions of students in the school.

**Topic 20. Hygienic principles of rational organization of physical education and labor training of children and adolescents. Scientific bases of medical and professional consultation.**

Hygienic principles of rational organization of physical education of children and adolescents. Types, means and forms of physical culture in modern educational institutions. The concept of motor activity. Scientific bases and methods of quantitative measurement and hygienic assessment of motor activity. Prevention of hypokinesia. Physiological and hygienic bases of assessment of a lesson of physical culture. Hygienic requirements for places of physical education classes. Medical control over the organization of physical education classes and hygienic aspects of medical support of physical education of children and adolescents. Physiological and hygienic bases of hardening of an organism of children and teenagers. Basic types, principles and methods of organization of hardening. Hygienic principles of rational organization of labor and polytechnic education of children and adolescents. Physiological and hygienic bases of control over labor training of schoolchildren. Hygienic requirements to the content, mode and conditions of the organization and carrying out of labor training in the conditions of various types of modern educational institutions. Vocational guidance as a hygienic problem. Psychophysiological aspects of professional self-determination. Professiography. Modern system of professional orientation, its functions and leading components. Scientific bases of medical and professional consultation. The concept of professional selection. Methods for predicting professional success.

**Section of discipline 6. Radiation hygiene.**

**Topic 21. Regularities of radiation exposure formation of the person in places of residing, its hygienic assessment and ways of decrease. Radiation safety and antiradiation protection at objects with radiation-nuclear technologies.**

Qualitative and quantitative characteristics of ionizing radiation. Sources of ionizing radiation, their propagation in the environment. Methods of application of radionuclides and other sources of ionizing radiation in production, medicine, in scientific researches. Biological action of ionizing radiation and conditions on which it depends. The essence of radiation hazard when working with radionuclides and other sources of ionizing radiation in various industries. Principles of hygienic standardization of radiation safety and norms of radiation safety (NRBU-97) and Basic sanitary rules (OSPU) of work with radioactive substances and other sources of ionizing radiation. Classification of types and devices of radiation control, principles of operation of these devices.

**Topic 22. Hygienic assessment of radiation protection of personnel and radiation safety of patients with the use of radionuclides and other sources of ionizing radiation in health care facilities.**

Ionizing radiation as an industrial hazard for the staff of medical institutions. Ionizing radiation as a risk factor for patients of medical institutions during X-ray diagnostic and therapeutic procedures. The structure of the radiology department of the hospital. Features of radiation danger and radiation protection in each structural unit (open, closed sources, remote therapy). Characteristics of radiation danger in the X-ray diagnostic room and the conditions on which it depends. Requirements for X-ray room planning. Radiation safety regulations and benefits for staff of medical institutions and patients (NRBU-97, OSPU-01, other legislative documents). Ways to reduce the radiation exposure of staff and patients of medical institutions. Sanitary equipment of X-ray and radiology departments. Methods of collecting and disposing of radioactive waste when working with open sources of ionizing radiation. Methods and means of sanitary and radiation control when working with sources of ionizing radiation in medical institutions.

**Topic 23. Hygienic aspects of living in areas with high levels of radioactive contamination due to the Chernobyl disaster.**

Methods of application of radionuclides and other sources of ionizing radiation in medical institutions for diagnostic and therapeutic purposes. Regularities of biological action of ionizing radiation. The essence of radiation hazard when working with radionuclides and other sources of ionizing radiation. Principles and means of radiation protection. Classifications of radiation accidents and features of the Chernobyl accident. The essence of the "Concept of living of the population of Ukraine in areas with high levels of radioactive contamination" and the Law of Ukraine "On the legal regime of territories affected by radioactive contamination as a result of the Chernobyl disaster."

**Section of discipline 7. Emergency hygiene.**

**Topic 24. Organization of hygiene during emergency response. Features of temporary accommodation of the affected population, rescue and military formations.**

Hygienic requirements for land plots set aside for the formation of formations and for planning the territory of these plots. Hygienic requirements for sanitation of accommodation (water supply, collection, removal and disposal of solid and liquid waste, etc.). Features of the microclimate and chemical composition of the air in field dwellings, fortifications sunk into the ground.

**Topic 25. Organization of sanitary supervision of food and water supply in disasters and during the war.**

The concept of "nutrition", the conditions of its provision. Health disorders and diseases that can occur if you do not comply with each of the conditions of nutrition. Methods of prevention of alimentary, infectious diseases, helminthiasis, food poisoning, food lesions with poisonous substances, radioactive substances, bacterial agents. Hygienic characteristics and requirements for food quality; Criteria (standards) for expert evaluation of food products. Organizational and staff formations and laboratory facilities of the medical service of formations for food examination in the field.

**Topic 26. The organization and carrying out of sanitary supervision over working conditions of liquidators of consequences of emergency situations.**

The importance of hygienic provision of working conditions for military and civilian formations in emergencies. Characteristic features of working conditions in emergencies depending on their origin. Harmful and dangerous factors that accompany catastrophes and other emergencies, their impact on the health and efficiency of disaster liquidators and the affected population. Clinical and psychophysiological methods for assessing the efficiency, fatigue, health status of liquidators.

**Recommended literature**

1.Hygiene and ecology. Manual/under the edit. of V. G. Bardov. – Vinnytsya: Nova Knyha, 2009. – 720 p.

2. Загальна гігієна: пропедевтика гігієни: Підручник / Є. Г. Гончарук, Ю.І.Кундієв, В.Г.Бардов та ін.; За ред. Є. Г. Гончарука. – К.: Вища школа, 1995. - 552 с.

3. Общая гигиена (пропедевтика гигиены) : Учебник / Е.И.Гончарук, В.Г.Бардов, Г.И.Румянцев и др.; Под ред. Е. И. Гончарука. - К.: Вища школа, 1991. - 384 с.

4. Профілактична медицина. Загальна гігієна з основами екології: Підручник / І.І.Даценко, Р.Д.Габович. – К.: Здоров’я, 2004. –792 с.

5. Гигиена / Р. Д. Габович, С. С. Познанский, Г. Х. Шахбазян. - К.: Вища школа, 1983. – 320 с.

6. Загальна гігієна / Під ред. І. І.. Даценко. - Львів, 1992. - 302 с.

7. Комунальна гігієна / Є.Г. Гончарук, В.Г. Бардов, С.І. Гаркавий, О.П. Яворівський та ін.; За ред. Є.Г. Гонча рука. – К.: Здоров’я, 2003. – 728 с.

8. Руководство к практическим занятиям по общей гигиене / Г. Н. Румянцев, Т. А. Козлова, Е. П. Козловская. – М.: Медицина, 1980. - 234 с.

**Discipline policy and values.**

**Discipline requirements. Class attendance and behavior.**

Students are expected to attend all practical lessons. If they missed classes, it is necessary to work it out (according to the schedule on the information stand of the department).

Written and homework must be completed completely and on time, if students have questions, you can contact the teacher in person or by e-mail, which the teacher will provide in the first practical lesson.

Practical lessons

Active participation during the discussion in the audience, students should be ready to understand the material in detail, ask questions, express their point of view, discuss. During the discussion, it is important:

- Respect for colleagues,

- Tolerance for others and their experience,

- Receptivity and impartiality,

- The ability to disagree with the opinion, but to respect the identity of the opponent (s),

- Careful argumentation of his opinion and the courage to change his position under the influence of evidence,

- Self-expression, when a person avoids unnecessary generalizations, describes his feelings and formulates his wishes based on their own thoughts and emotions,

- Mandatory acquaintance with primary sources.

A creative approach in its various manifestations is welcome. Students are expected to be interested in participating in city, national and international conferences, competitions and other events in the subject profile.

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 water;

- take photos of presentation slides;

- take an active part in the class.

It is prohibited:

- eating (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.

Use electronic gadgets for games, correspondence on social networks (except for breaks), loud conversations, etc.

**Plagiarism and academic integrity**

The Department of Hygiene and Ecology No. 2 maintains zero tolerance for plagiarism. Students are expected to raise constantly 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 Safety**

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 is, 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 professional training of medical profile and published on the site of KhNMU, the site of the Department of Hygiene and Ecology No. 2 of KhNMU.

**Academic Integrity Policy**

The Department of Hygiene and Ecology No. 2 maintains zero tolerance for plagiarism. Students are expected to raise constantly their awareness of academic writing. The first lessons will provide information on what to consider plagiarism and how to conduct properly research and scientific research.

**Policy for people with special educational needs**. The Department of Hygiene and Ecology No. 2 supports the tasks of social protection of persons with special needs and comprehensively supports and creates the necessary conditions for their individual development and realization of their intellectual and creative potential, taking into account the identified needs.

**Recommendations for successful discipline. Incentives and penalties**.

If students wish for in-depth study of the discipline, it is possible to prepare research work in accordance with the subject of the course, which is assessed by adding from 3-10 points to the total score in the discipline. In order to assess the independent work of students, an alternative option is offered (optional): traditional types of tasks: writing a test, abstract or creative types: preparation of a multimedia presentation, elaboration of educational literature (annotation, review, citation, abstracts, and lectures).

**Safety precautions**

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 evacuation exit is closest to the audience, where the fire extinguisher is, how to use it, and so on.

In case of changes in the syllabus, a new version of the document will be provided to the guarantor of the OPP.

**Evaluation policy**

**Evaluation system and requirements.**

When studying the discipline, the current and final semester control is used. In addition, there is a mandatory control of the assimilation of educational material of the discipline, assigned to independent work.

Current control (assimilation of certain topics) is carried out in the form of oral interviews, testing, conversations of students on predetermined issues, in the form of speeches of higher education students with reports when discussing educational issues in practical classes.

In order to assess the independent work of students, an alternative is offered (optional): traditional types of tasks: writing a test, abstract or creative types: preparation of a multimedia presentation, elaboration of educational literature (compilation of annotations, reviews, citations, abstracts).

The final semester control in the discipline is a mandatory form of control of academic achievements of higher education students. It is conducted in written and oral. The terms of the final semester control are set by the schedule of the educational process, and the amount of educational material, which is submitted for the final semester control, is determined by the work program of the discipline. The form of final control of academic performance in the discipline is a differential test.

Criteria for assessing student achievement

Students' knowledge is assessed in all types of classes according to the following criteria:

1) "**Excellent**" - corresponds to a high (creative) level of competence:

- The student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use the acquired knowledge and skills for decision-making in unusual situations, convincingly argues answers, independently reveals own talents and inclinations;

2) "**Good**" - the Student receives two levels of assessment depending on the number of points scored and corresponds to a sufficient (constructive-variable) level of competence:

- The student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standard situations, independently corrects mistakes, the number of which is insignificant;

- The student is able to compare, summarize, organize information under the guidance of the teacher; as a whole to apply it independently in practice; control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm opinions;

3) "**Satisfactory**" - the Student receives two levels of assessment depending on the number of points scored and corresponds to the average (reproductive) level of competence:

- The student reproduces a significant part of the theoretical material, shows knowledge and understanding of the basic provisions; with the help of a teacher can analyze educational material, correct mistakes, among which there are a significant number of significant;

- The student has the study material at a level higher than the initial; a significant part of it is reproduced at the reproductive level

4) "**Unsatisfactory**" - corresponds to a low (receptive-productive) level of competence:

- The student has not mastered the material of the discipline, does not know the scientific facts, definitions, almost does not navigate in the original sources and recommended literature, there is no scientific thinking, practical skills are not formed.

The total number of rating points for the study of the discipline for the semester is calculated as the sum of points obtained by the results of the current control and points obtained by the results of the final semester control. The maximum amount of points for the semester is 200 points, the minimum - 120 points. Assessment of students is carried out in accordance with the "Instructions for assessing the educational activities of students in the European credit transfer system for the organization of the educational process at KhNMU."

The current educational activity of students (hereinafter - SCA) is controlled by the teacher of the academic group, after students master each topic of the discipline and grades are set using a 4-point (national) system. At the end of the semester, the teacher automatically receives the average grade (to the nearest hundredth) for SCA using an electronic journal of the AAS system.

For the discipline, the study of which is completed in the current semester and the form of its control is a differential test, the average score on the IPA teacher of the department is recalculated into a 200-point scale.

For the discipline, the study of which is completed in the current semester and the form of its control is a test, the average score on IPA by the teacher of the department is recalculated into a 200-point scale.

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

**(For disciplines completed by Differentiated Credit)**

| 4-point scale | 120- point scale |  | 4- point scale | 120- point scale |
| --- | --- | --- | --- | --- |
| 5 | 120 | 3.91-3,94 | 94 |
| 4.95-4,99 | 119 | 3.87-3,9 | 93 |
| 4.91-4,94 | 118 | 3.83- 3,86 | 92 |
| 4.87-4,9 | 117 | 3.79- 3,82 | 91 |
| 4.83-4,86 | 116 | 3.74-3,78 | 90 |
| 4.79-4,82 | 115 | 3.7- 3,73 | 89 |
| 4.75-4,78 | 114 | 3.66- 3,69 | 88 |
| 4.7-4,74 | 113 | 3.62- 3,65 | 87 |
| 4.66-4,69 | 112 | 3.58-3,61 | 86 |
| 4.62-4,65 | 111 | 3.54- 3,57 | 85 |
| 4.58-4,61 | 110 | 3.49- 3,53 | 84 |
| 4.54-4,57 | 109 | 3.45-3,48 | 83 |
| 4.5-4,53 | 108 | 3.41-3,44 | 82 |
| 4.45-4,49 | 107 | 3.37-3,4 | 81 |
| 4.41-4,44 | 106 | 3.33- 3,36 | 80 |
| 4.37-4,4 | 105 | 3.29-3,32 | 79 |
| 4.33-4,36 | 104 | 3.25-3,28 | 78 |
| 4.29-4,32 | 103 | 3.21-3,24 | 77 |
| 4.25- 4,28 | 102 | 3.18-3,2 | 76 |
| 4.2- 4,24 | 101 | 3.15- 3,17 | 75 |
| 4.16- 4,19 | 100 | 3.13- 3,14 | 74 |
| 4.12- 4,15 | 99 | 3.1- 3,12 | 73 |
| 4.08- 4,11 | 98 | 3.07- 3,09 | 72 |
| 4.04- 4,07 | 97 | 3.04-3,06 | 71 |
| 3.99-4,03 | 96 | 3.0-3,03 | 70 |
| 3.95- 3,98 | 95 | Under 3 | Insufficient |

**13.2 Differentiated Credit.**

Differentiated credit (hereinafter - DC) - is conducted by the teacher of the academic group in the last lesson of the discipline. Admission to the DC is determined in the points of IPA, namely: min - 70, max - 120 points. Directly DC is estimated from - 50 to - 80 points. The grade in the discipline is the sum of points for SCA and DC in points from min - 120 to max - 200 and corresponds to the national scale and ECTS scale.

Differentiated credit for the discipline or its part is a process during which the received for the course (semester) are checked:

- Level of theoretical knowledge;

- Development of creative thinking;

- Skills of independent work;

- Competencies - the ability to synthesize the acquired knowledge and apply them in solving practical problems.

Assessment of theoretical knowledge, if practical skills are assessed by the criteria of "performed", "failed"

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number of questions | «5» | «4» | «3» | Oral answer by cards, which include the theoretical part of the discipline | For each answer, a student gets from 10 to 16 points, which corresponds to:  «5» - 16 points;  «4» - 13 points;  «3» - 10 points. |
| 1 | 16 | 13 | 10 |
| 2 | 16 | 13 | 10 |
| 3 | 16 | 13 | 10 |
| 4 | 16 | 13 | 10 |
| 5 | 16 | 13 | 10 |
|  | 80 | 65 | 50 |

Correspondence of marks by a 200-point scale, four-point (national) scale and ECTS scale

|  |  |  |
| --- | --- | --- |
| Mark  By a 200-point scale | Mark  By ECTS scale | Mark  By four-point (national) scale |
| 180–200 | А | Excellent |
| 160–179 | В | Good |
| 150–159 | С | Good |
| 130–149 | D | Satisfactory |
| 120–129 | E | Satisfactory |
| Under 120 | F, Fx | Unsatisfactory |

**Elimination of academic debt** is carried out by self-study of theoretical material, followed by oral interviews, testing and discussion of the topic of missed classes with the teacher. In the case of a sufficient level of knowledge on the subject, academic debt is considered eliminated. Free practice is carried out within 30 days from the moment of missed class (without permission from the dean's office), if the term from the moment of missed class exceeds 30 days of practice is carried out only in case of permission to liquidate academic debt from the dean's office taking into account discipline. classes of which are carried out on a paid basis.

**Rules for appealing the assessment**. The grade in the discipline can be appealed on the basis of the requirements of the "Regulations on the organization of the educational process in KhNMU" No. 370 dated 27.08.2019, supplemented in accordance with the order No. 114 dated 20.05.2020.

Acting Head of Department of Hygiene

and Ecology No.2

Cand. of Med. Sci., Assoc. Prof. M.O. Sydorenko