

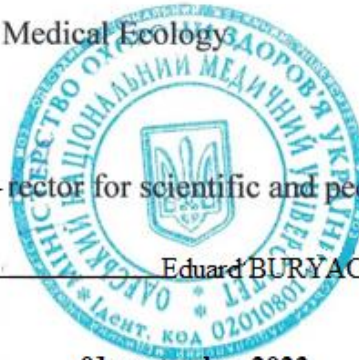
MINISTRY OF HEALTH PROTECTION OF UKRAINE

ODESSA NATIONAL MEDICAL UNIVERSITY

Department of Hygiene and Medical Ecology



Vice-rector for scientific and pedagogical work



APPROVE

Eduard BURYACHKIVSKY

01 september 2023

**WORKING PROGRAM OF EDUCATIONAL DISCIPLINE
"HYGIENE IN THE PHARMACY"**

Level of higher education: second (master's)

Field of knowledge: 22 "Health care"

Specialty: 226 "Pharmacy"

Educational and professional program: Pharmacy

The work program is compiled on the basis of the educational and professional program "Pharmacy" for the training of specialists of the second (master's) level of higher education in the specialty 226 "Pharmacy" of the field of knowledge 22 "Health care", approved by the Scientific Council of ONMedU (protocol No. 8 of June 29, 2023).

Developers:

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The work program was approved at the meeting of the department of hygiene and medical ecology Protocol No. 1 dated August 30, 2023.

Head of the department  Volodymyr BABIENKO

Agreed with the guarantor of the OPP  Lina UNGURYAN

1. Description of the academic discipline:

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
Total number: Credits: 3 Hours: 90 Content modules: 2	Branch of knowledge 22 "Health care"	<i>Correspondence form of education</i>
		<i>Elective discipline</i>
	Specialty 226 "Pharmacy" The second level of higher education (master's)	<i>A year of training: 2</i>
		<i>Semesters III</i>
		<i>Lectures (0 hours)</i>
		<i>Seminars (30 hours)</i>
		<i>Practical (0 hours)</i>
		<i>Laboratory (0 hours)</i>
		<i>Independent work (60 hours)</i>
		<i>including individual tasks (0 hours)</i>
<i>The form of the final control-credit</i>		

2. The purpose and tasks of the educational discipline

Purpose: The purpose of teaching the academic discipline "**Hygiene in Pharmacy**" is: the study of the theoretical foundations of preventive medicine, in particular hygiene and ecology, as sciences that are the basis of the preventive component of the professional worldview of a specialist in the field of training "Pharmacy"; mastering the necessary knowledge, skills, actions, target tasks, skills that correspond to the ultimate goals of studying the academic discipline in accordance with the Standard of Higher Education of Ukraine.

Task:

1. Laying the theoretical foundations of hygiene and ecology as sciences (terminology, laws, methods, principles of hygienic regulation. Normative and methodical support for the application of preventive measures) and practicing practical skills regarding: prevention of diseases of infectious and non-infectious origin in accordance with the principles of the current legislation of Ukraine;
2. Mastering laboratory research methods (organoleptic, physical, chemical, biological, bacteriological methods);
3. Use of favorable environmental health factors to strengthen human health, harden the body, etc.

The process of studying the discipline is aimed at forming elements of the following competencies:

Integral (IC):

- IC – Ability to solve problems of a research and/or innovative nature in the field of pharmacy and to critically consider and solve practical problems in professional pharmaceutical activity using provisions, theories and methods of fundamental, chemical, technological, biomedical and socio-economic sciences; integrate knowledge and solve complex issues, formulate judgments based on insufficient or limited information; clearly and unambiguously convey one's own knowledge, conclusions and their validity to a professional and non-professional audience. Ability to continue learning with a high degree of autonomy.

General (GC):

- GC01. Ability to think abstractly, analyze and synthesize, learn and be modernly educated.
 GC02. Knowledge and understanding of the subject area and understanding of professional activity.
 GC03. Ability to communicate in the national language both orally and in writing.

GC04. The ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.

GC05. The ability to evaluate and ensure the quality of the work performed.

GC06. Ability to work in a team.

GC07. The ability to realize one's rights and responsibilities as a member of society; to realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.

GC08. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technologies, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle.

GC09. Ability to use information and communication technologies.

GC10. The ability to act socially responsibly and consciously.

GC11. Ability to apply knowledge in practical situations.

GC12. The desire to preserve the environment.

GC13. Ability to show initiative and entrepreneurship.

GC14. Ability to adapt and act in a new situation.

GC15. Knowledge and understanding of the subject area and understanding of professional activity

GC16. The ability to conduct experimental research at the appropriate level.

Special (SC):

FK07. The ability to carry out sanitary and educational work among the population for the purpose of prevention of common diseases, prevention of dangerous infectious, viral and parasitic diseases, as well as for the purpose of promoting timely detection and support of adherence to the treatment of these diseases in accordance with their medical and biological characteristics and microbiological features

Program learning outcomes (PLO):

PLO 10. To carry out sanitary and educational work among the population for the purpose of prevention and in the event of outbreaks of dangerous infectious, viral and parasitic diseases

PLO 15. Predict and determine the influence of environmental factors on the quality and consumer characteristics of medicinal products of natural and synthetic origin and other products of the pharmacy assortment, organize their storage in accordance with their physical and chemical properties and the rules of Good Storage Practice (GSP).

PLO 25. Adhere to the norms of the sanitary and hygienic regime and the requirements of safety equipment when carrying out professional activities.

As a result of studying the academic discipline, the student of higher education must:

Know: methods of disease prevention, methods of laboratory research of the environment, regulatory and legal bases of Sanitary Legislation

Be able:

Provide an appropriate sanitary and hygienic assessment based on the results of laboratory studies of microclimate factors

Assess water quality based on the results of chemical and microbiological studies Conduct:

- assessment of the physical development of children and adolescents based on the results of anthropometric studies

- preventive sanitary and hygienic measures to combat NCI

- luxmetry of the level of natural and artificial lighting of premises of various purposes

- water sampling for chemical and microbiological indicators.
- chemical analysis of dairy products for adulteration.
- assessment of the diet of different age groups for compliance with established standards
- chemical, organoleptic, bacteriological research of food and water quality
- prevention of occupational diseases and poisonings
- Determine the biodose of ultraviolet radiation using the Gorbachev device.

4. Content of the educational discipline "Hygiene in pharmacy"

Content module 1.

"General hygiene issues"

SUBJECT No. 1 Methods of hygienic research. The structure of the sanitary organization of Ukraine. Sanitary legislation. Preventive and current sanitary supervision.

Definition of hygiene, its purpose, tasks, content, connection with other sciences. Preventive orientation of domestic medicine, public and personal, primary, secondary and tertiary prevention, defining priorities. The importance of knowledge of hygiene for the formation of professional thinking and practical activities of doctors of various specialties.

The concept of methodology as a doctrine of scientific knowledge of reality. Basics of hygiene methodology: general philosophical laws and categories, their use in hygiene. The laws (postulates) of hygiene, their essence, the role of the most prominent domestic scientists-hygienists for their scientific justification, interpretation and practical use. Methods and techniques of hygienic research, their classification. Methods of studying the state of the environment and its hygienic assessment, methods of studying the impact of the environment on health. Specific methods of hygienic research. Forms of hygienic experiment. The basic conceptual apparatus of hygiene and ecology.

Definition and interpretation of concepts: health, disease, level of health, environment, external environment, biosphere, noosphere, harmful substance, ways of action of harmful substances on the body: isolated, combined, complex and combined.

The concept of hygienic standards, its varieties, objects subject to regulation, importance in carrying out preventive measures. Principles of hygienic regulation: physiological and hygienic approach (priority of medical indications), differentiation of biological responses, distribution of sanitary safety objects, consideration of possible adverse consequences, threshold, dependence of the effect on concentration (dose) and time of action, laboratory experiment, aggravation, relativity of the standard .

Scientific institutions and institutions carrying out hygienic regulation. Hygienic significance of components of the biosphere (atmosphere, hydrosphere, lithosphere).

Sanitation as a field of practical activity in the health care system. Types of sanitation. State and departmental sanitary-epidemiological service, its structure in Ukraine and other countries. Sanitary and epidemiological station as a leading institution of practical activity in the field

preventive medicine, its structure and varieties. Sanitary doctor as a leading specialist of sanitary and epidemiological service, basic forms and methods of work of sanitary doctors.

Preventive state and departmental sanitary supervision, its essence and main stages in the process of planning, construction and reconstruction of objects, introduction of new technologies, materials and products from them. Current state and departmental sanitary supervision. Basics of sanitary legislation, its most important elements and significance for the implementation of preventive measures.

Connection of sanitary-epidemiological and medical-prophylactic services, their joint work in the field of preservation and strengthening of individual and population health.

TOPIC No. 2 Methodology for determining and hygienic assessment of temperature, humidity and their influence on heat exchange. Study of barometric pressure.

Hygienic value of air temperature and radiation temperature, their influence on body heat transfer. Methods of research of air temperature, spatial and temporal temperature regime of premises of various purposes. Hygienic value of air humidity, its effect on body heat transfer. Methods of air humidity research (psychrometry and hygrometry). Hygienic requirements for air humidity in rooms of various purposes. Methods of optimizing the temperature and humidity regime of premises. Hygienic value of space heating, its types. Hygienic requirements for heating premises of various purposes. Hygienic value of atmospheric pressure. Barometry.

TOPIC No. 3 Methodology for determining and hygienic assessment of natural and artificial lighting of premises.

Hygienic importance of natural and artificial lighting of premises. Methods of determining indicators of natural illumination of premises (light coefficient, angle of incidence of light rays on the workplace, opening angle, coefficient of natural illumination). Hygienic requirements for natural and artificial lighting in the premises of pharmacies and chemical and pharmaceutical enterprises. Types of artificial lighting of premises. Artificial lighting research methods (objective and calculated). Hygienic requirements for artificial lighting in the premises of pharmacies and chemical and pharmaceutical enterprises.

TOPIC No. 4 Methodology for determination and hygienic assessment of ultraviolet and infrared components of the solar spectrum, their use for therapeutic and preventive purposes.

Physical foundations of solar radiation. The concept of solar activity, "solar wind", interplanetary magnetic field. Interaction of solar radiation with the Earth's magnetosphere and atmosphere.

The value of the ozone layer of the atmosphere, ozone "holes". The solar spectrum at the upper limit of the atmosphere and on the Earth's surface. The influence of solar activity on the biosphere and human health.

Hygienic value of the infrared radiation of the Sun, pathology caused by its excessive action, its prevention. Infrared radiation of artificial origin and its use in medicine, devices for determination.

Hygienic significance of the visible radiation of the Sun and its use in medicine, devices for determination.

Hygienic value of ultraviolet radiation of the Sun and its use in medicine, devices for determination. Biogenic and abiogenic effects of ultraviolet radiation. Insufficient and excessive ultraviolet radiation, their negative impact on the body. Concept of erythemal and prophylactic dose of ultraviolet radiation. Artificial sources of ultraviolet radiation and their comparative hygienic characteristics. The use of natural and artificial ultraviolet radiation for the prevention of human diseases, prevention of the harmful effects of physical, chemical and biological factors.

TOPIC No. 5 Determination of carbon dioxide as an indirect indicator of anthropogenic indoor air pollution.

The hygienic value of carbon dioxide as an indirect indicator of anthropogenic indoor air pollution. Hygienic standards of CO₂ content in the air of premises of various purposes. The method of determining carbon dioxide and calculating the efficiency of ventilation of premises according to its content.

TOPIC No. 6 Research methods and hygienic assessment of the movement of atmospheric air, construction of a wind rose. Determination of the effectiveness of natural and artificial ventilation of premises.

Hygienic value of air movement speed, influence on body heat transfer. Methods of studying the speed of air movement (anemometry and catathermometry). Hygienic requirements for the speed of air movement in the premises of pharmacies and chemical and pharmaceutical enterprises. Types of ventilation. The concept of the multiplicity of air exchange. Study of the effectiveness of ventilation according to the speed of air movement.

Hygienic requirements for ventilation of the premises of pharmacies and chemical and pharmaceutical enterprises. Wind rose, its hygienic value.

TOPIC No. 7 Research and hygienic assessment of the quality of drinking water. Hygienic assessment of drinking water based on laboratory analysis data.

Hygienic assessment of drinking water analysis based on organoleptic, chemical, epidemiological indicators, as well as indicators of radiation safety and physiological adequacy of water quality. Hygienic requirements for the quality of drinking water in the organization of centralized and decentralized economic and drinking water supply (State sanitary rules and regulations "Hygienic requirements for drinking water intended for human consumption" dated May 12, 2010 No. 400).

TOPIC No. 8 Methods of improving the quality of drinking water. Methods of chlorination of drinking water. The hygienic value of general methods of improving water quality: settling, coagulation, filtration. Special methods of improving (conditioning) water quality. Physical and chemical methods of water disinfection. Comparative hygienic characteristics of different types of water chlorination. Method of ordinary water chlorination (according to chlorine demand). Hygienic value and method of determining residual chlorine in tap water.

Content module 2. "Special issues of hygiene"

TOPIC No. 9 Methods of determining human energy expenditure and its needs in basic food substances. Energy expenditure of the body, components of the total daily energy expenditure of a person, energy balance. Groups of physical activity of the able-bodied population. Concept of physical activity coefficient. Recommended energy and nutrient requirements for different population groups of Ukraine (1999). Methods of determination (calculation methods) of average daily energy expenditure (WHO, 1986) and individual needs for basic nutrients and energy, features of determining daily energy needs for children and the elderly.

TOPIC No. 10 Methodology for determining and hygienic assessment of a person's nutritional status. The concept of the nutritional status of the body. Methods of study and assessment of nutritional status. The method of objective examination of the patient for the study and evaluation of food status. Alimentary and alimentary-dependent diseases. Protein, protein-energy, vitamin deficiency, microelement diseases, alimentary obesity. The reasons for their occurrence.

Prevention. Loss of vitamins during cold and heat cooking.

TOPIC No. 11 Prevention of food poisoning.

Definition of the concept of food poisoning. Classification of food poisoning. Food toxic infections, etiology, pathogenesis, prevention.

Bacterial toxicoses. Botulism, etiology, pathogenesis, prevention. Staphylococcal toxicosis, etiology, pathogenesis, prevention.

Food poisoning of a non-microbial nature. The importance of food chains in the migration of toxic and radioactive substances from various environmental objects to human body. Value of residual amounts of chemicals in food products.

Prevention of food poisoning of microbial, non-microbial nature and unknown etiology, duties of the doctor in the investigation of food poisoning and in their prevention.

The role of aerogenous, purulent diseases, healthy carriage of intestinal pathogens

infections among the staff of food units in the occurrence of food poisoning of a microbial nature and infections.

TOPIC No. 12 Methodology of hygienic assessment of difficulty, tension, harmfulness and dangerousness of work.

Hygienic classification of work according to indicators of harmfulness and dangerous factors of the production environment, difficulty and tension of the labor process. The impact of physical and mental work on the body, fatigue and overfatigue. Ergonomic, physiological, psychophysiological indicators of

difficulty and intensity of work, methods of their determination, hygienic evaluation of work according to the degree of difficulty and intensity. Hygienic requirements for organization of work and rest, workplace, working posture, measures to prevent fatigue and overfatigue of workers of various specialties, and in particular clinical pharmacy specialists. Classification of harmful and dangerous factors of the production environment. Occupational diseases. Hygienic evaluation of work according to the degree of harmfulness and danger.

TOPIC No. 13 Methodology of hygienic assessment of physical factors of the industrial and environmental environment and the body's reaction to their influence.

Physical factors of production and environment. Impact of noise on the body. Methods of studying temporal characteristics, spectral composition and intensity of various types of noise. Hygienic requirements for the noise regime of communal and industrial facilities.

Impact of vibration on the body. Methods of researching the intensity of vibration of various origins.

Hygienic standards of vibration at communal and industrial facilities. Effects on the body and methods of research of electromagnetic fields of different frequency ranges.

Measures to prevent the harmful effects of noise, vibration and electromagnetic fields on the body.

TOPIC No. 14 Methods of monitoring anti-radiation protection of personnel and radiation safety of patients.

Methods of monitoring anti-radiation protection of personnel and radiation safety of patients.

Ionizing radiation as an environmental factor, their sources: natural, man-made and enhanced of natural origin, industrial. Sources of ionizing radiation used in medicine and pharmacy

Classification of ionizing radiation by nature and origin. Qualitative and quantitative characteristics of ionizing radiation and radionuclides.

Biological effect of ionizing radiation. Modern ideas about its mechanisms, the conditions on which it depends,

its features. Deterministic and stochastic effects of human exposure, conditions of their occurrence, use of this knowledge in the practical activities of doctors.

Radiation safety of the population in their places of residence, factors that determine it. Patterns of the formation of radiation exposure of the population, its hygienic evaluation and ways reduction. The natural radionuclide radon and medical x-ray radiological diagnostic procedures for the population as the main components of the radiation load of people, their hygienic assessment and special measures to reduce the level of their contribution to the total radiation dose.

Ionizing radiation as an industrial hazard. Conditions that determine the radiation hazard when working with radionuclides and other sources of ionizing radiation. The concept of closed and open sources of ionizing radiation, features of radiation danger and anti-radiation protection when working with them.

Anti-radiation protection of workers with radionuclides and other sources of ionizing radiation as a hygienic problem, its essence and basic principles of implementation: hygienic regulation of ionizing radiation, Radiation safety standards of Ukraine (NRBU - 97), their meaning and main provisions. Basic sanitary rules of anti-radiation protection of Ukraine - (OSPU - 01) as a State regulatory document defining the basic requirements for the implementation of anti-radiation protection in the conditions of practical activity.

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

TOPIC No. 15 Methodology for determination and hygienic assessment of sanitary-chemical and microbiological air pollution in the production zone of pharmacies and chemical-pharmaceutical enterprises.

Dust and its classification by origin, chemical composition, dispersion. Types of dust pathology.

Classification of harmful chemicals by state of aggregation. Poisoning by lead, mercury, hydrogen sulfide, ammonia, chlorine and nitrogen oxides. Selection methods samples and research of the content of dust and industrial poisons in the air of industrial premises. Express methods of determining harmful substances at chemical and pharmaceutical enterprises.

Microbial contamination.

TOPIC No. 16 Hygiene of pharmacy establishments. Hygienic assessment of the location, planning and improvement (according to the pharmacy project) and the sanitary regime of pharmacy establishments. The main establishments of the pharmacy network, their categories. Hygienic requirements for land plots of pharmacies. Hygienic requirements for insulation of pharmacies. Hygienic requirements for internal planning and decoration of pharmacy establishments. Hygienic requirements for natural and artificial lighting. Hygienic requirements for the temperature and humidity regime of pharmacies. Hygienic requirements for natural and artificial ventilation of pharmacy establishments. Hygienic requirements for hot and cold water supply of pharmacies. Hygienic requirements for sewerage and removal of solid waste. Hygienic requirements for maintenance and cleaning of pharmacy premises. Organization of preventive sanitary supervision. Selection and allocation of land for construction.

Examination of construction projects

TOPIC No. 17 Occupational hygiene of pharmaceutical industry workers and pharmacy workers, industrial hazards, prevention of occupational diseases. The influence of the process and working conditions on the state of health and working capacity of employees of pharmaceutical enterprises and pharmacies. Assessment of working conditions. Measures for the prevention of diseases of pharmacy staff related to the tension of the visual analyzer and forced working posture. Industrial hazards that accompany the work of employees of pharmaceutical and pharmacy establishments (dust, noise, vibration, ultrasound, infrasound), their characteristics, specific effects on the body, preventive measures.

TOPIC No. 18 Industrial toxicology. Methods of determining the main parameters of toxicometry. Importance of hygienic regulation of harmful chemicals. Types of regulations: hygienic, technical, environmental. Hygienic regulation of medicinal substances. Principles of hygienic rationing. Scheme of toxicological experiment. Toxicometry. Basic parameters of toxicometry. Concept of toxicokinetics, toxicodynamics. Cumulation, methods of its assessment. Long-term effects of xenobiotics. Allergenic action of xenobiotics. Concept of neurotoxic, gerontogenic, atherogenic effects of chemicals.

TOPIC No. 19 Comprehensive assessment of the sanitary condition and anti-epidemic regime in pharmacies. To know the hygienic meaning of personal hygiene, the system of organizing sanitary and educational work in Ukraine. Learn the principles of personal hygiene, methods and means of sanitary education. To be able to follow the principles and rules of personal hygiene, to carry out measures with the active involvement of the population in the process of health promotion. Know the role and tasks of sanitary education, the principles of its organization. tasks of pharmacy institutions in the organization of sanitary education. To learn the methodology of carrying out sanitary and educational work using various forms and methods. To be able to prepare a detailed plan and theses of a lecture (conversation) on a medical topic and to conduct it, to prepare a visual means of agitation. The importance of observing personal hygiene for human health: hygiene of the human body, hygiene of clothes and shoes, regime of work and rest, rational nutrition. Hygienic importance of hardening and physical culture. Basics of psychohygiene. Biorhythmological foundations of human activity. Desynchronization, prevention.

SUBJECT No. 20 Differential assessment provides for the assessment of students' knowledge, abilities and skills from the passed material in each discipline based on the current grades received by them in classes for all types

4. The structure of the academic discipline

Names of topics	Number of hours					
	In total	у тому числі				
		lectures	seminars	practical	laboratory	IWS
Content module 1. "BASES OF GENERAL HYGIENE"						
SUBJECT No. 1 Methods of hygienic research. The structure of the sanitary organization of Ukraine. Sanitary legislation.	5		2			3
SUBJECT No. 2 Methods of determination and hygienic assessment of temperature, humidity and their influence on heat exchange.	5		2			3
TOPIC No. 3 Methods of determining and hygienic assessment of natural and artificial lighting of premises.	5		2			3
TOPIC No. 4 Methods of determination and hygienic assessment of ultraviolet and infrared components of the solar spectrum, their use for therapeutic and preventive purposes.	3					3
TOPIC No. 5 Determination of carbon dioxide as an indirect indicator of anthropogenic indoor air pollution.	5		2			3
TOPIC No. 6 Methods research and hygienic assessment of the movement of atmospheric air, construction of a wind rose. Determination of efficiency natural and artificial ventilation of	5		2			3

premises.						
TOPIC No. 7 Research and hygienic assessment of the quality of drinking water. Hygienic assessment of drinking water according to laboratory data analysis	5		2			3
TOPIC No. 8 Methods of improving the quality of drinking water. Methods chlorination of drinking water.	5		2			3
<i>Together according to content module 1</i>	38		14			24
Content module 2. "Special issues of hygiene"						
TOPIC No. 9 Methods of determining human energy expenditure and its needs in basic food substances.	5		2			3
TOPIC No. 10 Methods of determining and hygienic assessment of the nutritional status of a person. The concept of the nutritional status of the body.	5		2			3
TOPIC No. 11 Prevention of food poisoning	5		2			3
THEME No. 12 The method of hygienic assessment of severity, tension, harmfulness and occupational hazards.	5		2			3
THEME No. 13 Methodology of hygienic assessment of physical factors of production and environment and reaction organism to their influence.	5		2			3

TOPIC No. 14 Methods of monitoring anti-radiation protection of personnel and radiation safety patients	5		2			3
TOPIC No. 15 Methodology for determination and hygienic assessment of sanitary-chemical and microbiological air pollution in the production zone of pharmacies and chemical-pharmaceutical establishments enterprises.	3					3
TOPIC No. 16 Hygiene of pharmacy establishments. Hygienic assessment of the location, planning and improvement (according to the pharmacy project) and the sanitary regime of pharmacy establishments.	3					3
TOPIC No. 17 Occupational hygiene of pharmaceutical industry workers and pharmacy workers, industrial hazards, prevention of professional diseases	5		2			3
THEME No. 18 Industrial toxicology. Methods of determining the main parameters of toxicometry. Importance of hygienic regulation of harmful chemicals	5					5
THEME No. 19 Comprehensive assessment of the sanitary condition and anti-epidemic regime in pharmacy institutions.	7		2			5
<i>Together according to content module 2</i>	52		16			36
In total	90		30			60

4. Topics of lectures / seminars / practical / laboratory classes

5.1. Topics of lectures

Not provided

5.2. Topics of seminar classes

№	Topic	Number of hours
1	Methods of hygienic research. The structure of the sanitary organization of Ukraine. Sanitary legislation.	2 hours
2	Methods of determination and hygienic assessment of temperature, humidity and their influence on heat exchange.	2 hours
3	Methods of determining and hygienic assessment of natural and artificial lighting of premises.	2 hours
4	Determination of carbon dioxide as an indirect indicator of anthropogenic indoor air pollution.	2 hours
5	Research methods and hygienic assessment of the movement of atmospheric air, construction of a wind rose. Determination of the effectiveness of natural and artificial ventilation of premises.	2 hours
6	Research and hygienic assessment of the quality of drinking water. Hygienic assessment of drinking water based on laboratory analysis data.	2 hours
7	Methods of improving the quality of drinking water. Methods of chlorination of drinking water.	2 hours
8	Methods of determining a person's energy expenditure and his needs in basic food substances.	2 hours
9	Methods of determining and hygienic assessment of the nutritional status of a person. The concept of the nutritional status of the body.	2 hours
10	Prevention of food poisoning	2 hours
11	The method of hygienic assessment of severity, tension, harmfulness and dangerousness of work.	2 hours
12	The method of hygienic assessment of physical factors of the industrial and environmental environment and the body's reaction to their influence.	2 hours
13	Methods of monitoring anti-radiation protection of personnel and radiation safety of patients	2 hours
14	Occupational hygiene of workers in the pharmaceutical industry and pharmacy workers, industrial hazards, prevention of occupational diseases.	2 hours
15	Comprehensive assessment of the sanitary condition and anti-epidemic regime in pharmacy institutions.	2 hours
Together		30 hours

5.1. Topics of practical classes

Not provided

5.2. Topics of laboratory classes

Laboratory classes are not provided.

4. Independent work of a student of higher education

№	Topic. The type of independent work is an essay	Number hours
1.	SUBJECT No. 1 Methods of hygienic research. The structure of the sanitary organization of Ukraine. Sanitary legislation.	3
2.	TOPIC No. 2 Methodology for determining and hygienic assessment of temperature, humidity and their influence on heat exchange.	2
3.	TOPIC No. 3 Methodology for determining and hygienic assessment of natural and artificial lighting of premises.	3
4.	TOPIC No. 4 Methodology for determination and hygienic assessment of ultraviolet and infrared components of the solar spectrum, their use for therapeutic and preventive purposes.	3
5.	TOPIC No. 5 Determination of carbon dioxide as an indirect indicator of anthropogenic indoor air pollution.	3
6.	TOPIC No. 6 Research methods and hygienic assessment of atmospheric movement air, building a wind rose. Determination of the effectiveness of natural and artificial ventilation of premises.	3
7.	TOPIC No. 7 Research and hygienic assessment of the quality of drinking water. Hygienic assessment of drinking water according to laboratory analysis data.	3
8.	TOPIC No. 8 Methods of improving the quality of drinking water. Methods of chlorination of drinking water.	3
9.	TOPIC No. 9 Methods of determining human energy expenditure and its needs in basic food substances.	3
10.	TOPIC No. 10 Methodology for determining and hygienic assessment of a person's nutritional status. The concept of the nutritional status of the body.	3
11.	TOPIC No. 11 Prevention of food poisoning	3
12.	TOPIC No. 12 Methodology of hygienic assessment of difficulty, tension, harmfulness and dangerousness of work.	3
13.	TOPIC No. 13 Methodology of hygienic evaluation of physical factors of production and the environment and the body's reactions to their influence.	3
14.	TOPIC No. 14 Methods of monitoring anti-radiation protection of personnel and radiation safety of patients	3
15.	TOPIC No. 15 Methods of determination and hygienic evaluation of sanitary-chemical and microbiological air pollution in the production area of pharmacies and chemical and pharmaceutical enterprises.	3
16.	TOPIC No. 16 Hygiene of pharmacy establishments. Hygienic assessment of the location, planning and improvement (according to the pharmacy project) and sanitary regime pharmacy institutions.	3

17.	TOPIC No. 17 Occupational hygiene of pharmaceutical industry workers and pharmacy workers, industrial hazards, prevention of occupational diseases.	3
18.	TOPIC No. 18 Industrial toxicology. Methods of determining the main parameters of toxicometry. Importance of hygienic regulation of harmful chemicals	5
19.	TOPIC No. 19 Comprehensive assessment of sanitary and anti-epidemic conditions regimen in pharmacies.	5
	Total	60

4. Teaching methods

Practical classes: conversation, solving situational problems, practicing skills, filling out protocols on the subject of classes, performing laboratory tests.

Independent work: independent work with recommended basic and additional literature, with electronic information resources, independent work with a bank of test tasks.

5. Forms of control and evaluation methods

(including criteria for evaluating learning outcomes)

Current control: oral survey, testing, assessment of performance of practical skills, assessment of performance of work with devices, solution of situational tasks, assessment of activity in class.

Final control: credit.

Evaluation of the current educational activity in a practical session:

- Evaluation of theoretical knowledge on the subject of the lesson:
 - methods: survey, solving a situational problem
 - maximum score – 5, minimum score – 3, unsatisfactory score – 2.
- Assessment of practical skills on the topic of the lesson:
 - methods: assessment of the correctness of the performance of practical skills
 - maximum score – 5, minimum score – 3, unsatisfactory score – 2.

The grade for one practical session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

Current evaluation criteria in practical training

Rating	Evaluation criteria
«5»	The student is fluent in the material, takes an active part in discussing and solving the situational problem, confidently demonstrates practical skills, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«4»	The student has a good command of the material, participates in the discussion and solution of the situational problem, demonstrates practical skills with some errors, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«3»	The applicant does not have sufficient knowledge of the material, is unsure of participating in the discussion and solution of the situational problem, demonstrates practical skills with significant errors.
«2»	The applicant does not possess the material, does not participate in the discussion and solution of the situational problem, does not demonstrate practical skills.

Credit is given to the applicant who completed all tasks of the work program of the academic discipline, took an active part in practical classes, completed and defended an individual assignment and has an average current grade of at least 3.0 and has no academic debt.

Assessment is carried out: at the last lesson before the beginning of the examination session - with the tape system of learning, at the last lesson - with the cyclical system of learning. The credit score is the arithmetic mean of all components according to the traditional four-point scale and has a value that is rounded according to the statistics method with two decimal places after the decimal point.

9. Distribution of points received by students of higher education

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale	200-point scale
Perfectly («5»)	185 – 200
Fine («4»)	151 – 184
Satisfactorily («3»)	120 – 150
Unsatisfactorily («2»)	Below 120

A multi-point scale (200-point scale) characterizes the actual success of each applicant in learning the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Acquirers who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to students who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is assigned to students who have attended all classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale	Statistical indicator
A	Top 10% achievers
B	The next 25% of earners

C	The next 30% of earners
D	The next 25% of earners
E	The next 10% of earners

10. Methodological support

- Working program of the academic discipline
- Syllabus
- Methodical developments for practical classes
- Methodical recommendations for independent work of higher education applicants
- Multimedia presentations
- Situational tasks
- Electronic bank of test tasks by subdivisions of the discipline

Educational and methodical literature:

1. Pharmaceutical hygiene.: study guide/ V.V., Babienko, A.V. Mokienko, O.A. Gruzevskiy - Odesa: Press-courier, 2022. 324p.
2. Hygiene propaedeutics; textbook: in 2 vols. T1/ V.V., Babienko, A.V. Mokiienko - Odessa: Preskuryer, 2022. 400p.
3. Hygiene propaedeutics; textbook: in 2 volumes T2/ V.V. Babienko, A.V. Mokiienko - Odessa: Preskuryer, 2022. 400p.

11. Questions for preparing for the final inspection

1. History of the development of the science of hygiene.
2. Subject and tasks of hygiene.
3. The contribution of outstanding scientists to the development of hygiene.
4. Methods of hygienic research.
5. Chemical composition of atmospheric air and its hygienic significance.
6. Norms of chemical composition of air.
7. Hygienic characteristics of solar radiation.
8. Physical factors of air and their hygienic importance.
9. Sanitary and hygienic significance of atmospheric air pollution.
10. Sources of air pollution.
11. Sanitary protection of atmospheric air.
12. Methods of air disinfection in the premises of pharmacies.
13. Methods of determining the microclimate of industrial premises.
14. Influence of temperature, humidity, speed of air movement on people's health.
15. Soil composition and its hygienic and epidemiological significance.
16. Soil pollution and self-cleaning.
17. Hygienic and epidemiological importance of cleaning populated areas.
18. Sanitary protection of the soil and the degree of its contamination.
19. Physiological role and hygienic value of water.
20. Types and methods of water quality improvement.
21. Epidemiological importance of water.
22. Hygienic requirements for the quality of drinking water and its sanitary evaluation according to the state standard "Drinking water"
23. Sanitary protection of reservoirs.
24. Physiological and hygienic basics of nutrition.
25. Energy value of food.
26. Diet.

27. Vitamins, classification. Source of supply.
28. Prevention of food toxic infections and diseases caused by the consumption of poor-quality food.
29. Prevention of vitamin deficiency.
30. Mineral substances, importance for health.
31. Food preservation methods and terms of their implementation.
32. Hygiene of clothes and shoes.
33. Body and oral hygiene.
34. Requirements for personal hygiene of a pharmacist.
35. Hygienic requirements for the equipment and facilities of pharmacy premises.
36. Industrial hazards and dangerous factors in the pharmacist's work.
37. Methods of preventing industrial injuries and the development of occupational diseases in pharmacy establishments.
38. Requirements for the sanitary regime of pharmacies according to Order No. 275.
39. Preventive measures to eliminate the influence of industrial harmful and dangerous factors in the pharmacist's work.
40. Definition of the terms "disinfection", "sterilization", the mode of sterilization of drugs.
41. Requirements for the planning of pharmacies and their types.
42. Requirements for construction of pharmacies. The area of the land plot, landscaping.
43. Sanitary and demonstrative biological factors of air cleanliness in pharmacies.
44. Types of bactericidal lamps, calculations of their use in pharmacies.
45. Requirements for pharmacy lighting. Natural and artificial lighting. Lighting standards.
46. Ventilation of pharmacy premises and its types.
47. Calculations of necessary artificial ventilation of pharmacies.
48. Requirements for the planning and maintenance of pharmacy points.
49. Requirements for the manufacture of sterile and non-sterile drugs according to order No. 275.
50. Sanitary and educational work, meaning and its forms and methods.
51. Features of the organization of sanitary and educational work in the pharmacy.
52. Sanitary requirements for cleaning premises, care for pharmacy equipment.
53. Sanitary and hygienic control of pharmacy establishments.
54. Disinfection measures of workplaces and quality control of disinfection.
55. Disinfection of pharmacist's hands and quality control of disinfection.
56. Medical examinations of pharmacy workers.

12. Recommended literature

Main:

4. Pharmaceutical hygiene.: study guide/ V.V., Babienko, A.V. Mokienko, O.A. Gruzevskiy - Odesa: Press-courier, 2022. 324p.
5. Hygiene propaedeutics; textbook: in 2 vols. T1/ V.V., Babienko, A.V. Mokiienko - Odessa: Preskuryer, 2022. 400p.
6. Hygiene propaedeutics; textbook: in 2 volumes T2/ V.V. Babienko, A.V. Mokiienko - Odessa: Preskuryer, 2022. 400p.

Additional:

7. "Hygiene in the practice of a dentist"; educational and methodological manual/ Babienko V.V., Mokiienko A.V., Kobolev E.V./ Odesa: Press-courier. 2022 180 p.
8. Water hygiene and water supply of populated areas: a study guide/ Babienko V.V., Mokienko A.V. – Odesa: Press Courier, 2021, 327 p.

13. Electronic information resources

1. <http://moz.gov.ua> – Ministry of Health of Ukraine
2. www.ama-assn.org - American Medical Association / AmericanMedicalAssociation
3. www.who.int - World Health Organization
4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. <http://bma.org.uk> - British Medical Association
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – German Medical Association