

National Pirogov Memorial Medical University, Vinnytsia

APPROVE

**Higher Educational Institution
Vice-Rector for Scientific and
Academic Work and International Links**



Inna ANDRUSHKO

September 2 2024

I AGREE

**Head of General Hygiene and
Ecology Department of HEI**



Igor SERGETA

August 28, 2024

***SYLLABUS
of the subject***

"HYGIENE IN PHARMACY AND ECOLOGY. OCCUPATIONAL SAFETY"

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| Specialty | 226 Pharmacy, industrial pharmacy |
| Educational level | Master of Pharmacy, Industrial Pharmacy |
| Educational program | Educational and Professional Programme "Pharmacy", 2023 |
| Academic year | 2024-2025 |
| Chair | Department of general hygiene and ecology |
| Lecturer | Associate professor of HEI Oksana DYAKOVA, Senior Lecturer of HEI, Ruslan TEKLIUK, Lecturer of HEI Tetiana TYSEVYCH, Associate professor of the HEI Inna DREZHENKOVA |
| Contact Information | http://vnmu.edu.ua/ department of General Hygiene and Ecology. Ukraine, Vinnytsia, V. Stusa str, 2. |
| Syllabus compiled by | Associate professor of HEI Lyudmila PROTSYUK |

1. Status and structure of the subject

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| Subject status | Mandatory |
| Subject Code in discipline in EPP/place of discipline in EPP | EC40 / discipline of professional training |
| Year/semester | 4th year (7th semester) |
| Scope of the discipline (total number of hours/ number of ECTS credits) | 60 hours / 2 ECTS credits |
| Number of content modules | 4 modules |
| The structure of the subject | Lectures - 10 hours Practical classes - 30 hours Independent work - 20 hours |
| Language of education | English |
| Form of education | Classroom learning or distant by order |

2. Description of the discipline

Short abstract of the course, relevance. Professional training of pharmacists cannot be high-quality and effective without a deep study of preventive disciplines - hygiene and ecology, occupational health and safety in the industry, which form the basis of understanding the importance of preventive medicine and environmental protection for preserving and strengthening the health of the population. "Hygiene in pharmacy and ecology. Occupational safety in the industry" as an educational discipline studies the basics of hygiene and ecology, special hygiene issues of pharmacies and pharmaceutical enterprises, as well as ecological problems of the environment, related, in particular, to production, preservation of indicators, necessary for future specialists to understand the patterns of environmental influence on individual and population health, provision of proper working conditions, organization and maintenance of a sanitary-hygienic and anti-epidemic regime in pharmacies and pharmaceutical enterprises, development and implementation of preventive measures to preserve health and protect the environment. Also the discipline program provides for the study of occupational health and safety issues in relation to a specific industry and the specifics of the professional activities of future specialists, the discipline is aimed at providing knowledge, skills, abilities (competencies) for effective professional activity by ensuring optimal management of occupational safety and health at enterprises (objects of economic, economic, scientific, and educational activities), forming students' responsibility for personal and collective safety and awareness of the need to fully implement all measures to ensure occupational safety in the workplace. The main objectives of the discipline "Hygiene in pharmacy and ecology. Occupational health" are: to acquire knowledge of hygiene and occupational health and safety and its application at the level of an enterprise or organization; to study how to carry out a hygienic assessment of the influence of the factors of the production environment of pharmacies and pharmaceutical enterprises and environmental factors on the health of workers and the population, to study the issue of preventive measures to preserve health and protect the environment, to learn to identify the main adverse factors of the production environment; to be able to establish the compliance of the technological process, equipment, tooling, tools with the requirements of safety standards and occupational health and safety regulations; to master modern methods and means of reducing occupational injuries and occupational diseases; They are acquiring sustainable up-to-date knowledge of the theory of occupational safety and health, developing their skills to independently analyse working conditions and the state of occupational safety and health at enterprises in the industry, developing and implementing measures to preserve the health and performance of employees in specific production conditions.

The discipline focuses on the system of legal, socio-economic, organizational, technical, therapeutic, preventive, hygienic, and rehabilitation measures. The acquired knowledge, skills, and competencies will help to preserve the life and health of healthcare professionals and patients.

Prerequisites - The study of the discipline "Hygiene in pharmacy and ecology. Occupational health" in the specialty 226 "Pharmacy, Industrial Pharmacy" is based on knowledge of the basic

natural sciences: medical biology, medical and biological physics, biological and bioinorganic chemistry, human anatomy, histology, cytology and embryology, Latin, history of medicine, life safety, basics of bioethics and biosafety and is integrated with these disciplines.

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Course objective and its significance for professional activity:

for the future, to develop the hygienic thinking of the pharmacist, the ability to evaluate environmental factors, knowledge, the consequences of their negative impact on human health, related to the study of the laws of the organization of life, natural systems, defined theoretical bases for solving numerous environmental problems that arise in close connection with the development of modern production; issues of control, management and protection of the environment to preserve and strengthen human health, formation of knowledge, skills, and competencies in future specialists, as well as fostering a safety culture to ensure effective management of occupational safety in the medical industry, creating favorable conditions for the working environment and occupational safety by current legislation and regulations to implement the principle of priority protection of life and health of healthcare workers.

Prerequisites: the main provisions of the discipline can be used in the study of clinical and hygiene disciplines. It lays the foundation for the formation of knowledge, skills, and abilities, as education of moral and ethical values, which are determined by the final goals of the program, are necessary for further professional activity.

3. Learning outcomes:

As a result of studying the discipline, students should:

Be able to conduct professional activities in social interaction; identify future professional activities as socially significant for human health.

Apply knowledge of the discipline in professional activities.

To comply with the norms of sanitary and hygienic regimes and safety requirements in the performance of professional activities.

Argue information for decision-making, and take responsibility for them in standard and non-standard professional situations.

Use methods for assessing performance indicators; identify reserves for improving labor efficiency.

Promote health, including the prevention of occupational diseases. Perform professional duties in good faith and comply with the law. Possess psychological communication skills to achieve trust and mutual understanding with colleagues, doctors, patients, and consumers.

Ensure quality control of medicinal products and document their results. To manage quality risks at all stages of the life cycle of medicinal products.

4. Content and logistical support of the discipline

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| Content module 1. (Environment and methods of its research . Hygiene of air environment , water, soil , sanitary cleaning of settlements. Hygienic requirements for air conditioning, ventilation, lighting at pharmacy institutions) | 7th semester 19.5 hours / 0.65 credit | Lectures No. 1-2 Practical classes No. 1-5 Topics for independent work Nos. 1-3 |
| Content module 2. (Hygiene of nutrition. Radiation hygiene) | 7th semester 9 hours / 0.3 credit | Lecture I No. 3 Practical classes No. 6-7 Topics for independent work No. 4-5 |
| Content module 3. (Hygiene of pharmacy institutions) | 7th semester 6 hours / 0.2 credit | Practical classes No. 8-9 Theme for independent work No. 6 |

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| Content module 4. (Basic questions of occupational safety in pharmacies) | 7th semester 19 hours / 0.63 credit | Lectures No. 4-5 Practical classes No. 11-14 Topics for independent processing Nos. 7-11 |
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The course includes 31 topics, which are divided into 2 thematic modules.

Module 1. Hygiene in pharmaceuticals and ecology

Content module 1. Environment and methods of its research . Hygiene of air environment , water, soil, sanitary cleaning of settlements. Hygienic requirements for microclimate, ventilation, lighting at pharmaceutical institutions.

Topic 1. Introduction to hygiene and ecology . Place and meaning hygiene in the system medical sciences and practical activity pharmacist . Methods research in hygiene . Hygienic rating indoor microclimate pharmacy institutions and enterprises pharmaceutical industry .

Topic 2. History occurrence and main stages development and the current state of hygiene .

Topic 3. Hygienic rating radiant energy Determination method intensity ultraviolet radiation and its use for prevention diseases and sanitation air environment .

Topic 4. Hygienic value components biosphere , physical properties and chemical composition of air environment . Hygienic rating pollution air of pharmacies and institutions pharmaceutical production microorganisms and dust medical drugs Hygienic rating natural and artificial ventilation .

Topic 5. Hygienic assessment of natural and artificial education indoor and ultraviolet radiation

Topic 6. Soil and health . Sanitary cleaning of settlements place

Topic 7. Hygiene foundation and cleaning of the population place

Topic 8. Water and health . Hygienic the importance of water. Hygienic foundations water supply . Hygienic requirements and methods hygienic evaluations quality drinking water and water for pharmacies institutions and enterprises pharmaceutical industry according to the results of laboratory analysis . Methods improvement quality drinking water

Topic 9. Endemic goiter, fluorosis and caries as a hygienic problem profile (sea food , iodized salt , defluoridation and fluoridation of water).

Content module 2. Hygiene of nutrition. Radiation hygiene

Topic 10. Nutrition and health population Scientific foundations rational food Hygienic foundations Prof alimony diseases and food poisoning Assessment methodology oral care products .

Topic 11. Methods canning food product Food additives, their hygienic characteristic.

Topic 12. Study adequacy and balance food Calculation method energy consumption human and basic needs nutrients Hygienic rating nutritional status.

Topic 13. Hygienic look at food different aged groups , professions , patients inpatients , health centers institutions Parenteral Well its hygienic justification .

Topic 14. Methods of radiation control when working with sources ionizing radiation Calculated methods evaluations radiation security and parameters protection population from external radiation

Content module 3 . Hygiene of pharmaceutical institutions

Topic 15. Hygiene pharmacy institutions Hygienic rating projects construction of pharmacies. Hygienic requirements for the location , planning , construction , improvement, sanitary-hygienic and anti-epidemic mode of operation pharmacy institutions

Topic 16. Hygienic rating technological processes and working conditions workers pharmaceutical industry , pharmacy workers , profile professional disease Environmental passport of the enterprise .

Topic 17. Investigation methodology professional disease and poisoning . Preliminary and periodic medical examinations as their measures professions

Module 2. Occupational safety in the industry.

Content module 4. Basics question of protection of work in pharmacies.

Topic 1. Protection labor as a system of measures and means protection life health and working capacity of a person in the process its labor activity Protection work in the pharmaceutical industry industry : structure and functions services protection work ; administrative and public control over security labor , administrative public control over security work in pharmacy chains.

Topic 2. Psychophysiological and psychohygienic problems security and protection work in pharmacy .

Topic 3. Features design , construction , internal settings and sanitary and technical software pharmacy institutions as a component protection measures work in pharmacy .

Topic 4. Basics sanitary and hygienic requirements for pharmacies buildings as a component protection work in pharmacy .

Topic 5. Basics protection work in progress production , implementation and storage medical tools and products medical destination

Topic 6. Means individual protection working in negative production conditions environment : meaning , classification , order of appointment .

Topic 7. Collective and labor agreements as a reflection protection legislation labor Certification workers place : meaning , order of conduct .

Topic 8. Treatment and prevention food as a component protection measures works : meaning , indication and order of appointment , characteristics of rations .

Topic 9. Investigation , accounting and analysis unhappy cases at work , and cases non-productive nature. Funds social insurance : meaning , rights and obligations . Firefighter safety and injury prevention in the pharmaceutical industry industry

Topic 10. The unfortunate incidents and accidents in security facilities health , them investigation and accounting . Foundations production security medical employees

Topic 11. Features protection labor of personnel when working with autoclaves, sterilizers and distillers .

Program of the academic discipline (for correspondence form of education)

Module 1. Hygiene in pharmacy and ecology

Content module 1. Hygiene in pharmacy and ecology.

Topic 1. Hygiene as a science. The place and importance of hygiene in the system of medical sciences and the practical activity of a pharmacist.

Topic 2. Research methods in hygiene. Basic laws of hygiene. Hygienic assessment of the microclimate of the premises.

Topic 3. Hygienic assessment of radiant energy. The method of determining the intensity of ultraviolet radiation and its use for the prevention of diseases and sanitation of the air environment.

Topic 4. Psychohygienic basics of optimization of daily human activity.

Topic 5. Hygienic aspects of medical biorhythmology and chronohygiene. Hygiene of the adaptation process. Scientific basis of diagnosis and prevention of chronic fatigue.

Topic 6. Negative consequences for the human body of the widespread introduction of computer technology and mobile telephone communication.

Topic 7. Hygienic assessment of natural and artificial lighting, microclimate, ventilation and air cleanliness of pharmacy premises.

Topic 8. Hygienic assessment of the degree of difficulty and intensity of work.

Topic 9. Hygienic assessment of dust and toxic chemicals. Methodology of hygienic assessment of dangerous and harmful factors of the production environment and the organism's reaction to their influence. Occupational diseases and poisoning and their prevention.

Topic 10. Radiation hygiene. Hygienic problems of anti-radiation protection of workers with sources of ionizing radiation and radiation safety of the population.

Topic 11. Hygienic significance of the biosphere, solar radiation, climate and weather. Water and health. The hygienic value of water. Hygienic basics of water supply. Methods of improving the quality of drinking water. Hygiene of populated areas.

Topic 12. Hygienic importance of atmospheric air, water and soil. Sources of environmental pollution and problems of environmental protection.

Topic 13. Hygienic assessment of water supply. The method of hygienic assessment of drinking water based on the data of sanitary inspection of water supply systems and the results of laboratory analysis of samples. Methods of improving the quality of drinking water.

Topic 14. Ecology and health. General patterns of human adaptation to various environmental conditions. Environmentally determined and environmentally dependent diseases.

Topic 15. Studying the adequacy and balance of nutrition. Methods of hygienic assessment of human nutrition and organized teams. Methods of assessing the nutritional status and vitamin supply of the human body. Theoretical aspects and methods of prevention of alimentary and alimentary-related diseases.

Topic 16. Hygienic evaluation of the degree of quality of food products. Methods of sanitary examination of milk and dairy products, flour, bread, meat, fish and canned goods.

Topic 17. Nutrition and health. Scientific basis of rational nutrition. Nutrition in an ecologically unfavorable environment. Peculiarities of the interaction of food substances and medicines.

Topic 18. Theoretical aspects and methods of prevention of alimentary and alimentary-related diseases. Methods of investigation and prevention of cases of food poisoning.

The topics of the lecture course reveal the problematic issues of the relevant sections of the discipline.

Practical classes involve theoretical substantiation of the main issues of the topic and the acquisition of the following practical skills:

1) Conclude the impact of harmful and dangerous occupational factors on the healthcare workers' organism.

2) Justify the implementation of preventive measures by the fundamentals of the current legislation of Ukraine.

3) Plan measures to maintain a healthy lifestyle, and personal hygiene and implement them in healthcare practice.

4) Coordinate plans for preventive measures with the development plans of territorial, administrative, and production units.

5) Analyse and evaluate situations dangerous to life, health, and professional activity and make decisions on urgent measures.

The student's independent work involves preparation for practical classes and mid-term tests, study of topics for independent work outside the classroom, preparation of presentations, diagrams, tables. Control of mastering topics of independent work outside the classroom is carried out at intermediate control classes and final control of the discipline.

Individual work includes researching scientific literature, preparing reviews on the given topics for presentation at meetings of the student scientific circle, performing scientific and practical research, participation in professional Olympiads, scientific and practical conferences, competitions of student scientific works.

Thematic plans of lectures, calendar plans of practical classes, thematic plan of independent work outside the classroom, scope and directions of individual work are published on the website of the department.

Route of obtaining materials: Department of general hygiene and ecology/ To the student/ Full-time study/ Medicine/ 3rd year/ Teaching and methodical materials/ or via the link <https://www.vnmu.edu.ua/> Department of general hygiene and ecology#. Access to the materials is carried out from the student's corporate account [s 000 XXX @ vnmu . edu . u.a.](mailto:s000XXX@vnmu.edu.ua)

5. Forms and methods of monitoring learning success

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| Current control in practical classes | Methods: oral or written survey, testing, solving situational problems, conducting laboratory studies, their interpretation and evaluation of their results (drawing up a protocol in a workbook) |
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| Final control of the discipline - credit | Methods: oral survey (according to the regulations on the organization of the educational process at the Pirogov National Medical University (link https://www.vnmdu.edu.ua /Загальна інформація/ Main documents) |
| Means of diagnostics of learning success | Theoretical questions, situational tasks. |

6. Evaluation criteria

Assessment of knowledge is carried out according to the Regulations on the organization of the education in Vinnytsia Pirogov memorial medical university (link <https://www.vnmdu.edu.ua>/General information / Basic documents)

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| Current control | According to the fifth-point system of traditional grades: 5 - "excellent", 4 - "good", 3 - "satisfactory", 2 - "unsatisfactory" |
| Control of skills | According to the fifth-point system of traditional evaluations |
| Test | On a 200-point scale (arithmetic mean for the semester is converted into points) Credited: from 122 to 200 points Not credited: less than 122 points (see Evaluation Scale) |
| Final control of the discipline | Points for oral exam, solving of Practical situations, control of skills. Score for differentiated credit: 71-80 points - "excellent" 61-70 points - "good" 50-60 points - "satisfactory" Less than 50 points - "unsatisfactory" / did not pass |
| Discipline assessment: | Current performance - from 72 to 120 points (conversion of the average traditional grade for practical classes on a 120-point scale): 60% of the grade for the discipline Final control - from 50 to 80 points: 40% of the grade for the discipline Individual work - from 6 to 12 points A total of 122 to 200 points. |

Discipline evaluation scale: national and ECTS

| The sum of points for all kinds of educational activities | ECTS assessment | Score by the national scale |
|---|-----------------|--|
| 180-200 | A | credited |
| 170-179.9 | B | |
| 160-169.9 | C | |
| 141-159.9 | D | |
| 122-140.99 | E | |
| 60-121,99 | FX | not credited with the possibility of retake |
| 0-59,99 | F | unsatisfactory with mandatory retake of the discipline |

7. Policy of the subject/course

The student has the right to receive high-quality educational services, access to modern scientific and educational information, qualified advisory assistance during the study of the discipline and mastery of practical skills. The policy of the department during the provision of educational services is student-centered, based on the normative documents of the Ministry of Education and the Ministry of Health of Ukraine, the university charter and the procedure for providing education-

al services, regulated by the basic provisions of the organization of the educational process at M.I. Pirogov VNMU and the principles of academic integrity

Compliance with the rules of the VNMU routine, safety techniques at practical classes. Instruction on safety techniques for handling chemical reagents, technical and electrical devices is given at the first practical session by the teacher. A student who has not been instructed is not allowed to perform practical work.

After the announcement of the "**AIR ALARM**" signal, students must proceed from the educational premises to the shelter in an organized manner with the teacher. The teacher is the last to leave the audience, checks the premises for the absence of students and employees, and then goes to the shelter. Inside the protective structure, students must quickly and calmly take their seats and observe the rules of behavior in the shelter. During the stay in the protective structure, teachers provide the necessary support, take measures for a comfortable and calm stay in the shelter. After the danger is over and the alarm is declared, the teachers make sure that all students leave the shelter and continue their studies in the classrooms.

Requirements for preparation for practical classes. The student must come to the practical session on time. A student who is more than 15 minutes late for class is not allowed to attend the last class and must complete it in the prescribed manner.

The student must be theoretically prepared according to the topic, test tasks for the current topic must be solved in the workbook, extracurricular work has been completed.

During practical classes, the student must wear a medical gown. Students who do not have a robe are not allowed to attend class.

The student must observe safety rules during practical classes and during his stay in the premises of the department.

During the discussion of theoretical issues, students should demonstrate tolerance, courtesy and respect for their fellow students and the teacher; when performing practical tasks, the workplace must be kept in order and cleaned after performing practical work.

Lectures in video format are posted on the university website, department page (<https://www.vnmdu.edu.ua/> department of general hygiene and ecology/ to the Student).

Use of mobile phones and other electronic devices. The use of mobile phones and other electronic devices during the lesson is allowed only as a calculator for performing calculations during solving situational problems.

Academic integrity. While studying the discipline, the student must be guided by the Code of Academic Integrity of VNMU named after E. Pirogov (<https://www.vnmdu.edu.ua/> general information/ Main documents/ Code of academic integrity). In case of violation of the norms of academic integrity during the current and final examinations (writing off, giving a verbal prompt to a fellow student during the evaluation of his knowledge, using a mobile phone during the evaluation of knowledge, etc.), the student receives a grade of "2" and must work it out to his teacher in the prescribed manner within two weeks after receiving an unsatisfactory grade.

Retake of classes. Missed classes are made up in accordance with the procedure established in the Regulations on the Organization of the Educational Process at VNMU named after M. Pirogov (link <https://www.vnmdu.edu.ua/> General information/Basic documents) at the time determined by the practice schedule (published on the website of the department <https://www.vnmdu.edu.ua/> department of general hygiene and ecology#) to the teacher on duty. In order to make up for the missed class, the student must submit a completed protocol of the workbook on the relevant topic and answer questions on the topic of the class in writing or orally. Rework of missed lectures is carried out after providing a synopsis of the lecture material, or preparing your own presentation on the topic of the missed lecture .

Discipline control is given in accordance to the Regulations on the Organization of the Educational Process at VNMU named after M. Pirogov (link <https://www.vnmdu.edu.ua/> General information/Main documents). Students who have not missed unworked practical classes and lectures and have received an average traditional grade of at least "3" are admitted to the final examination.

Additional individual grades. Individual grades for the subject (from 1 to 12) a student can receive for individual work, the scope of which is published on the department's website in the

teaching and methodical materials of the discipline, the number of points is determined by the results of the IRS according to the Regulations on the Organization of the Educational Process at VNMU named after M.I. Pirogov (link [https://www.vnmu.edu.ua/ General](https://www.vnmu.edu.ua/General) information/Basic documents).

Resolution of conflict issues. In the event of misunderstandings and claims against the teacher due to the quality of educational services, assessment of knowledge and other conflict situations, the student must first notify the teacher of his claims. If the conflict issue is not resolved, the student has the right to submit an appeal to the head of the department in accordance with the Regulation on consideration of appeals by applicants for higher education at VNMU named after M. Pirogov ([https://www.vnmu.edu.ua/ General](https://www.vnmu.edu.ua/General) information/Basic documents).

Policy in the conditions of distant learning. The distance learning procedure is regulated by the Regulation on the introduction of elements of distance learning at VNMU named after E. Pirogov ([https://www.vnmu.edu.ua/ General](https://www.vnmu.edu.ua/General) information/Main documents). The main educational platforms for conducting training sessions are Microsoft Team , Google Meets . The procedure for conducting practical classes and lectures, exercises and consultations during distance learning is published on the website of the department (<https://www.vnmu.edu.ua/> department of general hygiene and ecology / To the student or [https://www.vnmu.edu .ua/](https://www.vnmu.edu.ua/) of general hygiene and ecology / News).

Feedback from the teacher is carried out through messengers (Viber, Telegram, WhatsApp) or e-mail (at the choice of the teacher) during working hours.

1. Educational resources

Educational and methodological support of the discipline is published on the website of the department (<https://www.vnmu.edu.ua/> department of general hygiene and ecology/ to the student).

Consultations are held twice a week according to the consultation schedule.

2. The schedule and distribution of groups by teachers is published on the website of the department ((<https://www.vnmu.edu.ua/> department of general hygiene and ecology / To the student).

3. The questions for the intermediate and final tests of the discipline are published on the website of the department ((<https://www.vnmu.edu.ua/> department of general hygiene and ecology / To the student).

The syllabus for the discipline "Hygiene and Ecology" was discussed and approved at the meeting of the Department of General Hygiene and Ecology (protocol No. 1, dated August 30, 2023)

Responsible for the course



Ludmila PROTSYUK

Head of the Department



Igor SERGETA