

SYLLABUS OF THE EDUCATIONAL COMPONENT
Pathological Physiology
for applicants for higher education of 2-3 year of study full-time form of education
(4 years 10 months)
of educational program «Pharmacy»
(Educational Program Name)
in specialty «226 Pharmacy and industrial pharmacy»
(Code and Specialty Name)
field of knowledge «22 Health»
(Code and Knowledge Field Name)
training for Master
(Higher Educational Level Name)

TEACHERS



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- 1. The name of higher education establishment and department:** the National University of Pharmacy, Department of Physiology and Pathological Physiology.
- 2. Address of the department:** Kharkiv, 12 Kylikovska str., 3rd floor, 057-706-30-66.
- 3. Web site of the department:** <http://pat.nuph.edu.ua/>
- 4. Information about teachers:**

Kononenko Nadiia

Doctor of Medical Sciences, Professor, head of the Department of Physiology and Pathological Physiology of the National Pharmaceutical University. Experience of scientific and pedagogical activity is 22 years. She teaches courses: "Pathological physiology", "Pharmacogenetics", "Pathophysiology of civilization diseases". Scientific interests: pathogenetic mechanisms of development of peptic ulcer, endocrine pathology; pharmacological studies of drugs.

Kononenko Alevtina

Candidate of Pharmaceutical Sciences, Associate Professor of the Department of Normal and Pathological Physiology of the National Pharmaceutical University. Experience of scientific and pedagogical activity - 12 years. Reads courses: "Human anatomy", "Human anatomy and the basics of histology", "Human anatomy", "Normal physiology". Scientific interests: anatomy, physiology, research of pharmacological properties of herbal remedies.

- 5. Consultations:** have at the Department of Physiology and Physiology in accordance with the

schedule.

6. Brief summary of the educational component: the "Pathological physiology" is a mandatory educational component for the second (master's) level in the specialty "226 Pharmacy, Industrial Pharmacy" educational programs "Pharmacy", "Clinical Pharmacy", "Perfume and Cosmetic Technology", "Pharmacy for Foreign Students", "Pharmacy for foreign students (Language of Instructions - English". Final control - exam.

7. The purpose statement of studying the educational component: the "Pathological Physiology" is to develop in-depth theoretical knowledge and practical skills for students to understand the basic concepts of general nosology, the role of destructive (destructive) and protective-compensatory phenomena in the development of the disease, analysis of typical pathological processes and their general patterns of development, assessment of the harmful effects of unsystematic and unreasonable use of drugs, interpretation of the basic principles of etiological and pathogenetic prevention and therapy of diseases.

8. Competences in accordance with the educational program:

Soft- skills / General competences (CG):

GC 2 Ability to apply knowledge in practical situations, make reasonable decisions.

GC 4. Ability to abstract thinking, analysis and synthesis, to learn and be modernly trained.

GC 6. Knowledge and understanding of the subject area and understanding of professional activity.

GC 8. Ability to communicate in the state language both orally and in writing, ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.

GC 12. Ability to conduct research at the appropriate level.

Hard-skills / Professional (special) competences (PC):

PC 1. Ability to conduct sanitary and educational work among the population to prevent common diseases, prevent dangerous infectious, viral and parasitic diseases, as well as to facilitate the timely detection and maintenance of adherence to treatment of these diseases in accordance with their medical and biological characteristics and microbiological characteristics.

PC 3. Ability to provide the first aid to patients and victims in extreme situations and emergencies.

PC 4. Ability to ensure the rational use of prescription and over-the-counter medications and other pharmaceutical products in accordance with physicochemical, pharmacological characteristics, biochemical, pathophysiological features of a particular disease and pharmacotherapeutic regimens for its treatment.

9. The program educational outcomes (PLO):

PLO 1. To carry out professional activities in social interaction based on humanistic and ethical principles; to identify future professional activities as socially significant for human health.

PLO 2. To apply knowledge of general and professional disciplines in professional activities.

PLO 4. To demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.

PLO 12. To analyze the information obtained as a result of scientific research, summarize, systematize and use it in professional activities.

PLO 15. To provide home care to patients in emergencies and victims in extreme situations.

PLO 16. To determine the influence of factors influencing the processes of absorption, distribution, deposition, metabolism and excretion of the drug and due to the condition, features of the human body and physico-chemical properties of medications.

10. Status of the educational component: *compulsory*.

11. Prerequisites of the educational component: is based on human anatomy, biology with the basics of genetics, normal physiology, Latin in pharmacy.

12. The volume of the educational component: 8 ECTS credits 240 hours: lectures - 16 hours, practical classes - 104 hours, individual work - 120 hours.

13. Organization of training:

The format of teaching the educational component

Content of the educational component:

Module 1. General pathophysiology

Content module 1. General nosology

Topic 1. Subject and tasks of pathological physiology.

Topic 2. The doctrine of the disease.

Topic 3. The role of heredity and constitution in pathology.

Topic 4. Pathogenic effect of environmental factors.

Topic 5. The role of reactivity in pathology. Impaired immune reactivity. Allergy.

Topic 6. The role of age factors in pathology.

Content module 2. Typical pathological processes

Topic 7. Cell damage.

Topic 8. Fasting.

Topic 9. Local circulatory disorders.

Topic 10. Inflammation.

Topic 11. Hypoxia.

Topic 12. Fever.

Topic 13. Disorders of tissue growth.

Content module 3. Typical metabolic disorders

Topic 14. Disorders of carbohydrate metabolism.

Topic 15. Disorders of protein metabolism.

Topic 16. Disorders of fat metabolism.

Topic 17. Violation of water-salt metabolism. General characteristics of water-electrolyte metabolism and its disorders.

Topic 18. Violation of acid-base balance. Semester control of the module: "General pathophysiology"

Semester control of the module: "General pathophysiology"

Module 2. Pathophysiology of organs and systems

Content module 4. Pathophysiology of the blood system, cardiovascular and respiratory systems

Topic 19. Violation of the circulating blood volume.

Topic 20. Pathophysiology of the red blood system.

Topic 21. Pathophysiology of the white blood system.

Topic 22. Pathophysiology of the blood coagulation system.

Topic 23. Pathophysiology of the heart.

Content module 5. Pathophysiology of blood vessels, external respiration, digestive system, liver and biliary system

Topic 24. Pathophysiology of blood vessels.

Topic 25. Pathophysiology of external respiration.

Topic 26. Pathophysiology of digestion.

Topic 27. Pathophysiology of the liver and biliary system.

Content module 6. Pathophysiology of the urinary, endocrine, nervous systems

Topic 28. Pathophysiology of the kidneys.

Topic 29. Pathophysiology of the endocrine system.

Topic 30. Pathophysiology of the nervous system.

Semester control of the module: "Pathophysiology of organs and systems"

Semester exam

14. Forms and types of academic achievements supervision:

Forms and types of academic achievements supervision

Progress supervision: the types of control are listed (oral survey, writing test tasks, solving situational (calculation) problems, etc.).

Supervision of content modules: the types of tests are listed (oral survey, preparation of test

tasks, solution of situational (calculation) problems, etc.).

Semester control form: semester credit.

Conditions for admission to the supervision of content modules: For example, for admission to the supervision of content module 2, it is necessary to have a minimum number of points for the topics (classes) of content module 1, for the supervision of content module 1.

Conditions for admission to semester supervision: For example, a current rating of more than 60 points, absence of missed laboratory, practical and seminar classes, fulfillment of all requirements stipulated in the work program of the educational component.

15. Evaluation system of the educational component:

Points from the educational component are calculated according to this ratio:

Types of evaluation	Maximum number of points (% of the number of points per module - for content modules)
Module 1	
Content module 1 <i>1. Evaluation of topics 1-6: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Content module 2 <i>1. Evaluation of topics 7-13: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Content module 3 <i>1. Evaluation of topics 14-18: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Semester control of module 2 ($\Sigma CM1+CM2+CM3$)/1.5	100
Module 2	
Content module 4 <i>1. Evaluation of topics 19-23: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Content module 5 <i>1. Evaluation of topics 24-27: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Content module 6 <i>1. Evaluation of topics 28-30: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of the content module 1: theoretical questions and test tasks.</i>	50 (50 %)
Semester control of module 2 ($\Sigma CM4+CM5+CM6$)/1.5	100
Semester exam	100

The individual work of applicants for higher education is evaluated during the control of knowledge at each lesson and during the content module supervision

Exam

A higher education student is considered admitted to the exam in a discipline if he or she has attended all classroom sessions provided for in the curriculum, completed all types of work provided for in the work program of the discipline and, while studying it during the term of study, has scored a number of points not less than the minimum of 60 points. The maximum number of points that a student can score for current academic activities is 100 points. The semester exam is conducted in the form of written work, during which the theoretical and practical skills of higher education students are assessed. The semester exam ticket consists of 3 theoretical questions and a practical assignment, which consists of a case study and 20 test questions. Evaluation of theoretical questions: each theoretical question is worth 20 points. Evaluation of the practical task: the case study is worth 20 points, and the test tasks are worth 20 points. One correct answer is worth 1.0 points. 20 tests x 1.0 = 20 points. Semester exams are graded according to the ECTS scale, 100-point and four-point scale ("excellent", "good", "satisfactory", "unsatisfactory").

16. Academic policies of the educational component:

Academic Integrity Policy. It is based on the principles of academic integrity stated in the POL "On measures to prevent cases of academic plagiarism at the National University of Pharmacy". Cheating during the evaluation of an applicant for higher education during supervision activities in practical (seminar, laboratory) classes, supervision of content modules and the semester exam is prohibited (including the use of mobile devices). Abstracts must have correct text references to the used literature. The detection of signs of academic dishonesty in the student's written work is a reason for the teacher not to credit it.

Class attendance policy. An applicant for higher education is obliged to attend classes (POL "On the organization of the educational process of the National University of Pharmacy ") according to the schedule (<https://nuph.edu.ua/rozklad-zanyat/>), to observe ethical norms of behavior.

Policy regarding deadlines, working out, rating increase, liquidation of academic debts. The completion of missed classes by an applicant for higher education is carried out in accordance with the POL "Regulations on the completion of missed classes by applicants and the procedure for eliminating academic differences in the curricula of the National University of Pharmacy" in accordance with the schedule for working out missed classes established by the department. Increasing the rating and liquidating academic debts from the educational component is carried out by the applicants in accordance with the procedure specified in the POL "On the procedure for evaluating the results of training of applicants for higher education at the National University of Pharmacy ". Applicants of higher education are obliged to comply with all deadlines set by the department for the completion of written works from the educational component. Works that are submitted late without valid reasons are assessed at a lower grade - up to 20% of the maximum number of points for this type of work.

Policy on appeals of evaluation of the educational component (appeals). Applicants for higher education have the right to contest (appeal) the evaluation of the educational component obtained during control measures. The appeal is carried out in accordance with the POL "Regulations on appealing the results of the final supervision of knowledge by applicants of higher education at the National University of Pharmacy".

17. Information and educational and methodical support of the educational component:

<p>The main reading suggestions</p>	<ol style="list-style-type: none"> 1. General and Clinical Pathophysiology / edited by A. V. Kubyshkin, A. I. Gozhemko. – Second edition. – Vinnytsia : Nova Knyha, 2016. – 656 p. 2. Workbook Pathological Physiology preparation for the unified state qualification exam: the integrated test exam “Krok 1. Pharmacy” and English language proficiency test / N. M. Kononenko, S. I. Myronchenko, V. A. Rybak [et al.]; ed. by.: prof. N. M. Kononenko. 3rd ed. Kharkiv: NUPh, 2022. 185p. 3. Workbook on pathological physiology for lectures, practical classes and self-study work: study guide / N. M. Kononenko, V. V. Hnatiuk, S. I. Myronchenko [et al.]; ed. by.: prof. N. M. Kononenko. Kharkiv: NUPh, 2021. 139 p. 4. Pathological physiology. Module 1: teaching aid for teachers for practical training with applicants for higher education specialty «226 Pharmacy, industrial pharmacy» of the educational and
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	<p>professional program «Pharmacy» / N. M. Kononenko, V. V. Gnatyuk, V. A. Rybak [et al.]. Kharkiv: NUPh, 2021. 260 p.</p> <p>5. Pathological physiology. Module 1: teaching aid for practical training for applicants for higher education in the specialty «226 Pharmacy, industrial pharmacy» of the educational and professional program «Pharmacy» / N. M. Kononenko, V. V. Gnatyuk, V. A. Rybak [et al.]. Kh.: NUPh, 2021. 245 p.</p> <p>6. Pathological Physiology: Manual for students of higher schools / S. I. Kryzhna, N. M. Kononenko, T. I. Tyupka [et al.]. Kharkiv: NUPh: Golden Pages, 2012. 200 p.</p>
Supplementary reading suggestions for in-depth study of the educational component	1. Pathophysiology: textbook / N. V. Krishtal, V. A. Mikhnev, N. N. Zayko et al. – 2nd edition, corrected. – Kiev : Medicine, 2018. – 656 p.
Current electronic information resources (magazines, websites) for in-depth study of the educational component	<p>1. Website of the Department of Physiology and Pathological Physiology: https://pat.nuph.edu.ua/</p> <p>2. Library of NUPh: e-mail https://lib.nuph.edu.ua/</p> <p>3. International Journal of Physiology and Pathophysiology: https://www.begellhouse.com/ru/journals/physiology-and-pathophysiology.html</p>
Moodle distance learning system	Distance learning website: https://pharmel.kharkiv.edu/

18. Technical support and software of the educational component: laptop, TV, personal computers with the software MS Windows 10 Professional Academic OLP MS Office standart 2019 Academic OLP for testing, multimedia device, screen, electrocardiograph, stopwatch, blood pressure meter digital DS-10a, tonometer, spirometer dry portable, glucometer OneTouch Select, posters of pathological changes in human organs and systems, models of pathological changes in human organs and systems, tissue culture laboratory equipment.