

Odessa National Medical University
Medical faculty
Department of General and Clinical Pathological Physiology
named after V.V. Podvysotsky

Syllabus of the discipline
"Pathological physiology"

Term	210 hours / 7,0 ECTS
Semester, study year	Medical faculty 5-6 semester, III year of study
Days, time, place	Olhiivska str., 4a (Main building of ONMedU), Department of General and Clinical Pathological Physiology named after V.V. Podvysotsky. Days and times of classes: according to the schedule of the educational department
Teachers	<ol style="list-style-type: none"> 1. Prof. Vastyanov R. S. 2. Prof. Kotyuzhynska S. G. 3. Assoc. prof. Pospelov O. M. 4. Assoc. prof. Lapshin D. Ye. 5. Assoc. prof. Babiy V. P. 6. Assoc. prof. Kovalenko L. G. 7. Assoc. prof. Yermuraki P. P. 8. Assoc. prof. Kuzmenko I. P. 9. Sen. teacher Gurkalova I. P. 10. Teaching assist. Goncharova L. V. 11. Teaching assist. Ostapenko I. O. 12. Teaching assist. Kirchev V. V. 13. Teaching assist. Sarakhan V. M. 14. Teaching assist. Rusnak S. V. 15. Teaching assist. Pogulich Yu. V.
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Consultations	According to the schedule posted on the information stand of the department

COMMUNICATION

Communication with students will be carried out in the classroom.

During distance learning, communication is carried out through the Microsoft Teams platform, as well as through e-mail correspondence, through Viber, Telegram, WhatsApp, Zoom messengers.

DISCIPLINE ANNOTATION

The subject of the discipline - the general patterns of functioning of the sick person, which occur at different levels of organization of the living organism as a whole and determine the mechanisms of occurrence, development of the disease, its completion and consequences.

Course prerequisites: the discipline is based on the ones previously studied by students, including the basic principles and knowledge of anatomy, histology, medical and biological physics, bioinorganic, bioorganic and biological chemistry, biology (general, molecular and medical), normal physiology, microbiology, integrates with these disciplines, and also with pathomorphology and pharmacology.

Postrequisites of the course: the study of pathological physiology forms students' ability to interpret the basic concepts of general nosology, interpret the causes, mechanisms of development and manifestations of typical pathological processes and the most common diseases, analyze, draw conclusions about the causes and mechanisms of functional, metabolic and structural disorders. diseases; provides fundamental training and acquisition of practical skills for the next professional activity of the doctor.

1. The purpose and objectives of the discipline

1.1. The purpose of teaching the discipline "Pathological Physiology" is to develop skills of obtaining and applying modern knowledge of pathophysiology throughout the professional development of the student/doctor/personality. On the basis of the ultimate goals for each section, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.

1.2. The main tasks of studying the discipline "Pathological Physiology" are to:

- understand the importance of pathophysiology for medicine and the health care system, its place in the system of medical knowledge;
- have an idea of clinical pathophysiology as a modern direction of development of pathophysiological science;

- understand the role of the experimental method in the study of pathological processes and diseases, its possibilities, limitations and prospects;
- interpret the basic concepts of general nosology;
- apply theoretical knowledge of nosology, cell pathophysiology, typical metabolic disorders, typical pathological processes in studies of etiology and pathogenesis, manifestations and consequences of disorders of functional systems (organs) and the most common human diseases;
- analyze and draw conclusions about the causes and mechanisms of functional, metabolic, structural disorders of organs and systems of the body in diseases;
- be able to combine the achievements of clinical research and modern experimental approaches in solving current problems of etiology and pathogenesis of diseases;
- based on the understanding of the basic laws of origin, development, options for completion of typical pathological processes, to be ready for the perception and assimilation of the latest advances in modern medical science.

1.3. Competences and learning outcomes, the formulation of which is facilitated by the discipline (relationship with the normative content of training of higher education, formulated in terms of learning outcomes. According to the requirements of the standard, the discipline provides students with

Program competencies, the formation of which is provided by the discipline:

Integral competence: Ability to solve complex problems and problems in a particular field of professional activity or in the learning process, which involves research and/or innovation and is characterized by complexity and uncertainty of conditions and requirements.

General Competences (GC):

1. Ability to increment abstract thinking, analysis and synthesis.
2. Knowledge and understanding of the subject area and understanding of professional activity.
3. Ability to communicate in the state language.
4. Ability to learn and master modern knowledge, use information and communication technologies; ability to search, process and analyze information from various sources.

Professional competencies of the specialty (PC):

1. Ability to determine the list of required clinical and laboratory studies and evaluate their results.

Program learning outcomes (PLO)

PLO 1. Evaluate information about the diagnosis using a standard procedure, based on the results of laboratory and instrumental studies. Determine the list of necessary clinical, laboratory and instrumental studies and evaluate their results (according to list 4).

PLO 2. Highlight the leading clinical symptom or syndrome (according to list 1). Establish a preliminary diagnosis, make a differential diagnosis and determine the clinical diagnosis of the disease (list 2)

DISCIPLINE DESCRIPTION

Forms and methods of teaching

The course will be presented in the form of lectures (40 hours), practical (70 hours), organization of independent work of students (100 hours).

The main forms of teaching the discipline are: lectures, practical classes, seminars, independent work of students. The following teaching methods are used in teaching the discipline: lectures, explanations, conversations, multimedia presentations, laboratory work, problem solving, oral questioning, testing, etc.

Independent work of students is to study the material of lectures, as well as in preparation for the implementation and defense of practical work, preparation for current and final control, performance of training tests, search for information from literature and the Internet and elements of scientific work.

Students' scientific work is carried out in the work of circles, preparation and speeches at scientific student conferences, writing articles.

The content of the discipline

Discipline section 1. General pathology

Topic 1. Subject, methods and tasks of pathophysiology. History of its development. General etiology and pathogenesis. Initial level of knowledge.

Topic 2. Typical cell responses to damage: types, mechanisms of development. Apoptosis and necrosis.

Topic 3. Typical disorders of peripheral circulation and microcirculation: classification, etiology and pathogenesis.

Topic 4. Inflammation: etiology, pathogenesis. Mediators. Local signs. Exudation and proliferation. General microcirculation disorders in the site of inflammation.

Topic 5. Thermoregulatory disorders: hypo- and hyperthermia. Fever: etiology, pathogenesis.

Topic 6. Typical pathological processes. Current control of knowledge

Topic 7. Pathophysiology of the immune system. Immunodeficiency and immunosuppressive states. Allergy: classification, etiology, pathogenesis.

Topic 8. Allergy: Allergic reactions of I-IV types. Pseudoallergic reactions. Autoimmune reactions.

Topic 9. Hypoxia: classification, etiology, pathogenesis.

Topic 10. Pathophysiology of tissue growth. Tumors: etiology, pathogenesis.

Topic 11. Typical pathological processes. Current control of knowledge

Topic 12. Disorders of water-salt metabolism: etiology, pathogenesis. Dyshydria, edema.

Topic 13. Pathophysiology of acid-base metabolism: acidosis, alkalosis.

Topic 14. Pathophysiology of energy and protein metabolism. Etiology and pathogenesis. Starvation.

Topic 15. Pathophysiology of fat and carbohydrate metabolism: etiology and pathogenesis. Atherosclerosis.

Topic 16. Pathophysiology of extreme conditions. Etiology and pathogenesis of shock and colaptoid conditions.

Topic 17. General metabolic disorders. Current control of knowledge

Discipline section 2. Pathophysiology of organs and systems

Topic 18. Pathophysiology of the blood system. Changes in the total volume. Blood loss. Erythrocytosis, posthemorrhagic anemia, etiology, pathogenesis.

Topic 19. Hemolytic, B12-folic deficient, iron deficiency anemia, etiology, pathogenesis

Topic 20. Leukocytosis and leukopenia: etiology, pathogenesis. Blood picture. Leukemoid reactions. Leukemia: etiology, classification, pathogenesis. Blood picture.

Topic 21. Pathophysiology of the hemostasis system: hemorrhagic syndrome, thrombosis and DIC syndrome.

Topic 22. Pathophysiology of the blood system. Current control of knowledge.

Topic 23. Pathophysiology of systemic circulation. Heart failure: classification, mechanisms of overload. Coronary insufficiency. Myocardial necrosis. General characteristics of arrhythmias: etiology, classification, pathogenesis.

Topic 24. Circulatory disorders caused by vascular dysfunction. General characteristics of hypertension. Pathogenesis of atherosclerosis.

Topic 25. Pathophysiology of external respiration. Respiratory failure.

Topic 26. Pathophysiology of the cardiovascular and respiratory systems. Current control of knowledge.

Topic 27. Digestive disorders in the gastrointestinal tract. Peptic ulcer disease. Pathophysiology of the intestine. Pancreatitis.

Topic 28. Pathophysiology of the liver. Hepatic failure. Komi. Jaundice.

Topic 29. Pathophysiology of the kidneys. Disorders of basic kidney function. Kidney failure. Nephrotic syndrome.

Topic 30. Pathophysiology of the digestive and excretory systems. Current control of knowledge.

Topic 31. General etiology and pathogenesis of endocrine disorders. Pathophysiology of the pituitary and adrenal glands.

Topic 32. Pathophysiology of the thyroid gland and a pair of thyroid glands. Disorders of endocrine function of the pancreas.

Topic 33. Pathophysiology of the nervous system. General signs and pathogenesis of disorders. Pathophysiology of higher nervous activity.

Topic 34. Pathological physiology of neurohumoral regulation.

Current control of knowledge.

Topic 35. Final test control.

References:

1. Патофізіологія : підруч. для студ. вищ. мед. навч. закл. / Ю. В. Биць, Г. М. Бутенко [та ін.] ; за ред.: М. Н. Зайка, Ю. В. Биця, М. В. Кришталю. - 6-е вид., перероб. і допов. - Київ : Медицина, 2017. - 737 с.
2. Патофизиология: учебник / Ю.В. Быць, Г.М. Бутенко, А.И. Гоженко и др. ; под ред. Н.Н. Зайко, Ю.В. Биця, Н.В. Крышталю. — К. : ВСИ “Медицина”, 2015. — 744 с.
3. General and clinical pathophysiology : textbook for students of higher educational institutions, of IV th level of accreditation / A. V. Kubyshkin [et al.] ; ed. by.: A. V. Kubyshkin, A. I. Gozhenko ; рец.: N. V. Krishtal, N. K. Kazimirko. - 2nd ed. - Vinnytsya : Nova Knyha Publishers, 2016. - 656 p.
4. Патофізіологія : підручник для мед. ВНЗ IV р. а. Затверджено МОН / за ред. М.В. Кришталю, В.А. Міхньова. - Київ : Медицина, 2017. - 656 с.
5. Simeonova N. K. Pathophysiology=Патофізіологія : textbook for students of higher medical educational institutions of the III-IV accreditation levels / N. K. Simeonova ; ed. by V. A. Mikhnev. – 3rd ed. - Kyiv : AUS Medicine Publishing, 2017. - 544 p.
6. Атаман О. В. Патофізіологія : підруч. для студ. вищ. мед. навч. закл. У 2-х т. Т. 1 : Загальна патологія / О. В. Атаман. - - 2-ге вид. - Вінниця : Нова книга, 2016. - 580 с.
7. Атаман О. В. Патофізіологія : підруч. для студ. вищ. мед. навч. закл. У 2-х т. Т. 2 : Патофізіологія органів і систем / О. В. Атаман. - 2-ге вид. - Вінниця : Нова книга, 2016. - 448 с.

EVALUATION

The grade for the discipline is determined on the basis of the sum of grades of current educational activity (arithmetic mean of current performance) and examination grade (traditional grade), which is set when assessing theoretical knowledge and practical skills according to the lists defined by the discipline program.

Thus, the shares of the results of the assessment of the current educational activity and the exam are 50 and 50 percent, respectively.

The current assessment of students on relevant topics is carried out according to the traditional 4-point system (excellent, good, satisfactory, unsatisfactory).

The grade "excellent" is given in the case when the student knows the program in full, illustrating the answers with various examples; gives comprehensively accurate and clear answers without any leading questions; spreads the material without errors and inaccuracies; performs practical tasks of varying complexity;

The grade "good" is given when the student knows the whole program and understands it well, answers the questions correctly, consistently and systematically, but they are not exhaustive, although the student answers additional questions without errors; performs practical tasks, experiencing difficulties only in the most difficult cases;

Grade "satisfactory" is given to the student on the basis of his knowledge of the entire scope of the program on the subject and a satisfactory level of understanding of it. The student is able to solve simplified problems with the help of leading questions; performs practical skills, experiencing difficulties in simple cases; is not able to systematically state the answer on his own, but answers directly asked questions correctly

The grade "unsatisfactory" is given in cases when the student's knowledge and skills do not meet the requirements of "satisfactory" assessment (does not know any of the above questions, or knows less than 50% of the questions).

Final control (generalization lesson, exam)

A mandatory component of the curriculum is the final test control in the discipline, which includes 50 test questions (30 minutes), as an indicator of students' acquisition of knowledge. Compilation of the final test control takes place at the last practical lesson in the discipline at CIAICEQ according to the schedule of the educational department, approved by the rector of the university. The student must provide the correct answers by at least 90% (45 questions). A paper copy of the information on the results of test control in the discipline signed by the head of the Center is sent to the department. The teacher files a statement in the Journal of attendance and student performance and puts assessments of current performance for the last lesson in the discipline, converting the results on the following scale:

- grade "excellent" - 50 correct answers;
- grade "good" - 47-49 correct answers;
- grade "satisfactory" - 45-46 correct answers;
- score "unsatisfactory" - 44 correct answers and less

A student who has not passed the final test control in the discipline is considered to have not completed the program in the discipline.

Only those students who do not have academic debts and have an average score of at least 3.00 for their current academic activity are allowed to take the final attestation (exam).

At the end of the course, the current performance is calculated as the average score of all grades obtained by the student on a traditional scale, rounded to 2 (two) decimal places.

Assimilation of topics of independent work of students, which is provided by the program, is checked during the exam.

Students who have completed the discipline program, have no academic debt, received at least 3.00 for current activities and passed a set of practical skills in the discipline according to the list are admitted to the exam. The grade on the exam consists of the student's answer to the questions from the list of questions provided by the discipline program. The exam is graded on a 4-point (traditional) scale. In the future, the student receives two grades: the first - on the traditional 4-point scale and the second on a 200-point system.

The multi-point scale characterizes the actual success of each student in mastering the discipline. Conversion of the traditional grade from the discipline to 200-point is performed by the information and computer center of the "Contingent" university program by the formula:

$$\text{average grade} = \frac{\text{current} / \text{discipline}}{\text{national grade}} \times 40 \text{ points}$$

national grade	points
«5»	185-200
«4»	151-184
«3»	120-150

According to the ECTS rating scale, students' achievements in the discipline are evaluated according to the scores they received, by ranking, namely:

ECTS grade Statistical indicator

ECTS grade	Statistical indicator
«A»	the best 10% of students
«B»	the next 25% of students
«C»	the next 30% of students
«D»	the next 25% of students
«E»	the last 10% of students

The student is included to the group of the best or worst among the reference group of classmates (faculty, specialty), i.e. his rating. When converting from a multi-point scale, as a rule, the limits of grades "A", "B", "C", "D", "E" do not coincide with

the limits of grades "5", "4", "3" on the traditional scale. Grade "A" on the ECTS scale cannot be equal to grade "excellent", and grade "B" - grade "good" and so on.

Students who receive grades "Fx" and "F" ("2") are not included in the list of ranked students. Such students automatically receive a score of "E" after re-evaluation. The grade "Fx" is given to students who have scored the minimum number of points for the current educational activity, but who have not been credited with the final control. Grade "F" is given to students who have attended all classes in the discipline, but did not score a grade point average (3.00) for current educational activities and are not admitted to the final control.

DISCIPLINE POLICY

Deadline and reevaluation policy

It is expected that students will attend all lectures and practical classes. If they missed classes, it is necessary to work it out (according to the schedule posted on the information stand of the department and according to the permission of the dean's office, if necessary).

Reconduction of controls of mastering of practical skills is carried out during the semester individually with the decision of time of carrying out working off.

Correction of unsatisfactory grades is carried out in the last month of study of the discipline under the conditions that the average score for the current educational activity is less than 3.00 (conducted according to the schedule posted on the information stand of the department).

Academic integrity policy

Observance of academic integrity by students of education provides:

- independent performance of educational tasks, tasks of current and final control (current controls and examination in the discipline) of learning outcomes (for persons with special educational needs this requirement is applied taking into account their individual needs and capabilities);
- links to sources of information in the case of the use of ideas, developments, statements, information;
- providing reliable information about the results of their own (scientific, creative) activities, used research methods and sources of information.

It is unacceptable in educational activities for participants in the educational process to:

use of prohibited auxiliary materials or technical means (cheat notes, abstracts, headphones, telephones, smartphones, tablets, etc.) during control measures.

For violation of academic integrity, students may be held subject to the following academic liability:

- reduction of results of assessment of control work, examination, credit, etc .;
- re-passing the assessment (test, exam, test, etc.);
- appointment of additional control measures (additional individual tasks, tests, tests, etc.).

Attendance and lateness policy

Attendance at lectures and practical classes is mandatory. If you are more than 15 minutes late, the lesson is considered missed and needs to be practiced.

Mobile devices

During practical classes, the use of a smartphone, tablet or other device for storing and processing information is allowed only with the permission of the teacher.

The use of mobile devices and their accessories is strictly prohibited during any form of control.

Behavior in the study room

During classes it is allowed: to leave the audience for a short time if necessary and with the permission of the teacher; take photos of presentation slides; take an active part in the class.

During classes it is forbidden: to eat (except for persons whose special medical condition requires another – in this case, medical confirmation is required); smoking, drinking alcohol and soft drinks or drugs; to use obscene language or use words that offend the honor and dignity of colleagues and faculty, to gamble; to damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter the premises and territories); shouting, shouting or listening to loud music in classrooms and even in corridors during classes.