Odessa National Medical University
Faculty of Medicine ,
Department of General and Clinical Pathological Physiology
named after V.V. Podvysotskyi

Course syllabus
"Pathological physiology"

Amount	180 hours / 6.0 ECTS
Semester, year of study	Faculty of Medicine 5-6 semester , III year of study
Days, time, place	St. Olgiivska, 4a (Main Building of ONMedU), Department of General and Clinical Pathological Physiology named after V.V. Podvysotskyi. Days and times of classes: according to the schedule of the educational department
Teachers	1. Prof. Vastyanov R.S. 2. Prof. Kotyuzhynska S.G. 3. Assoc. Pospelov O.M. 4. Assoc. Lapshin D.E. 5. Assoc. Babii V.P. 6. Assoc. Kuzmenko I.P. 7. Assistant Goncharova L.V. 8. Assistant Ostapenko I.O. 9. Assistant Kirchev V.V. 10. Assistant Sarakhan V.M.
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E-mail	patfiz@onmedu.edu.ua , https://t.me/patfizonmedu , https://www.facebook.com/groups/1931771850426027 , @patfiz.onmedu
Consultations	According to the schedule posted on the information stand of the department

COMMUNICATION

Communication with applicants will take place in the classroom.

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

COURSE ABSTRACT

The educational discipline "Pathophysiology" is studied in accordance with the Standard of higher education of the second (master's) level of the field of knowledge 22 "Health care" specialty 222 "Medicine" of the educational program of medicine.

Subject the study of the discipline – the general regularities of the functioning of the body of a sick person, which arise at different levels of the organization of the living organism as a whole and determine the mechanisms of the occurrence, development of the disease, its termination and consequences.

Course prerequisites: the discipline is based on 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, and is integrated with these disciplines. also with pathomorphology and pharmacology.

Post-requisites of the course: the study of pathological physiology forms in the acquirers the ability to interpret the basic concepts of general nosology, to interpret the causes, mechanisms of development and manifestations of typical pathological processes and the most common diseases, to analyze and draw conclusions about the causes and mechanisms of functional, metabolic, structural disorders of organs and body systems in diseases; provides fundamental training and acquisition of practical skills for the next professional activity of a doctor.

Purpose : Formation of systemic knowledge about the disease and the general patterns of occurrence and development of various diseases, formation in the students of the concept of complexity and dialectics of the relationship between harmful and protective-adaptive components of pathological processes; providing a theoretical base for further study of other medical and biological disciplines.

Task:

1. Formation of a certain amount of knowledge on the emergence and development of typical pathological processes and their modeling, understanding of the ways of pharmacocorrection of the main human diseases and creating a base that determines the professional competence and general erudition of the doctor.
2. Apply theoretical knowledge of nosology, cell pathophysiology , typical metabolic disorders, typical pathological processes in the study of issues of etiology and

pathogenesis, manifestations and consequences of functional system (organ) disorders and the most common human diseases.

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

- General (GK):

GK1 – Ability to abstract thinking, analysis and synthesis .

GK4 – Knowledge and understanding of the subject area and understanding of professional activity

GK10. Ability to use information and communication technologies

GK11. Ability to search, process and analyze information from various sources

- Special (SK):

SK6. Ability to determine the principles and nature of treatment and prevention of diseases

SK11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility

SK28. Ability to apply fundamental biomedical knowledge at a level sufficient to perform professional tasks in the field of health care

Program learning outcomes (PLO):

PLO1. Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.

PLO2. Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.

PLO3. Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems.

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

Know:

1) Studies by students of higher education of the state of functions and changes in relevant parameters under pathological conditions in experiments on animals, isolated organs, cells, models or based on experiments recorded in video films, motion pictures, presented in computer programs and other educational technologies.

2) Assessment of age, gender and individual characteristics of the course of diseases.

3) Solving situational problems (analysis and interpretation of parameters of homeostasis, indicators of activity of organs and systems, mechanisms of their regulation, etc.), which has a clinical-diagnostic and prognostic direction.

Be able:

- distinguish destructive (destructive) phenomena from compensatory and protective ones;
- apply understanding of the causes and mechanisms of the pathological process when making a diagnosis, when prescribing treatment and organizing preventive measures:
- evaluate and analyze the role of environmental factors in the occurrence of diseases, especially the pathogenic effect of ionizing radiation and chemical factors on the human body;
- independently carry out experimental research within the framework of one's specialty;
- independently give an assessment and provide assistance within the limits of one's competence extreme conditions.

COURSE DESCRIPTION

Forms and methods of education

The course will be taught in the form of lectures (26 hours), practical (58 hours), organization of independent work of applicants (96 hours).

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

The independent work of the applicants consists in processing the material of the lectures, as well as in preparing for the execution and defense of practical works, preparation for current and final control, execution of training tests, searching for information from literary sources and the Internet, and conducting elements of scientific work.

The scientific work of the winners is carried out in the work of groups, preparation and speeches at scientific conferences, writing articles.

The structure of the academic discipline:

Topic 1 Subject, methods and tasks of pathophysiology. The history of its development. General etiology and pathogenesis. Initial level of knowledge. Typical reactions of cells to damage: types, mechanisms of development. Apoptosis and necrosis.

Topic 2 Typical disorders of peripheral blood circulation and microcirculation: classification, etiology and pathogenesis.

Topic 3 Inflammation: etiology, pathogenesis. Mediators. Local signs. Exudation and proliferation. General disorders of microcirculation in the focus of inflammation.

Topic 4 Disorders of thermoregulation: hypo- and hyperthermia. Fever: etiology, pathogenesis.

Topic 5 Pathophysiology of the immune system. Immunodeficiency and immunodepressive conditions. Allergy: classification, etiology, pathogenesis.

Topic 6 Allergy: Allergic reactions of types I - IV. Pseudoallergic reactions. Autoimmune reactions.

Topic 7 Pathophysiology of tissue growth. Tumors: etiology, pathogenesis.

Topic 8 General nosology. Typical pathological processes. Current control of knowledge

Topic 9 Violation of water-salt exchange: etiology, pathogenesis. Dyshydria, edema.

Topic 10 Pathophysiology of acid-base metabolism: acidosis, alkalosis.

Topic 11 Pathophysiology of energy and protein metabolism. Etiology and pathogenesis. Starvation.

Topic 12 Pathophysiology of fat and carbohydrate metabolism: etiology and pathogenesis. Atherosclerosis.

Topic 13 Pathophysiology of extreme conditions. Etiology and pathogenesis of shock and colaptoid states.

Topic 14 General disorders of metabolism. Current control of knowledge

Topic 15 Pathophysiology of the blood system. Changes in the total volume. Blood loss. Erythrocytosis, posthemorrhagic anemia, etiology, pathogenesis.

Topic 16 Hemolytic, B12 - folate-deficient, iron-deficient anemias, etiology, pathogenesis

Topic 17 Leukocytosis and leukopenia: etiology, pathogenesis. A picture of blood. Leukemoid reactions. Leukemias: etiology, classification, pathogenesis. A picture of blood.

Topic 18 Pathophysiology of the hemostasis system: hemorrhagic syndrome, thrombosis and DVZ-syndrome.

Topic 19 Pathophysiology of systemic circulation. Heart failure: classification, overload mechanisms. Coronary insufficiency. Myocardial necrosis. General characteristics of arrhythmias: etiology, classification, pathogenesis.

Topic 20 Disturbance of blood circulation is caused by a violation of vascular functions. General characteristics of the occurrence of hypertension. Pathogenesis of atherosclerosis.

Topic 21 Pathophysiology of external breathing. Respiratory failure. Hypoxia: classification, etiology, pathogenesis.

Topic 22 Pathophysiology of the blood, cardiovascular and respiratory systems. Current control of knowledge.

Topic 23 Digestive disorders in the gastrointestinal tract. Ulcer disease. Pathophysiology of the intestine. Pancreatitis.

Topic 24 Pathophysiology of the liver. Liver failure. Commies. Jaundice

Topic 25 Pathophysiology of kidneys. Violations of the main functions of the kidneys. Kidney failure. Nephrotic syndrome.

Topic 26 General etiology and pathogenesis of endocrine disorders. Pathophysiology of the pituitary gland and adrenal glands. Pathophysiology of the thyroid and parathyroid glands. Disruption of the endocrine function of the pancreas.

Topic 27 Pathophysiology of the nervous system. General signs and pathogenesis of disorders. Pathophysiology of higher nervous activity.

Topic 28 Pathological physiology of digestive and excretory systems. Pathological physiology of neurohumoral regulation.

Current control of knowledge.

Topic 29 Final test control

Methods of control and criteria for evaluating learning outcomes

Current control: oral examination, testing, solving situational clinical problems, assessment of activity in the classroom.

Final control: oral exam, testing.

Criteria for current assessment in the practical lesson:

"5"	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;
"4"	Given provided that 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;
“3”	Given to the student on the basis of his knowledge of the entire volume of the program on the subject and a satisfactory level of understanding. 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 the directly asked questions correctly
“2”	Given in cases where 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).

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 structure of exam

The content of the evaluated activity	Number
Solving a clinical problem with the evaluation of laboratory and instrumental studies.	2
Answer to theoretical questions.	3

Criteria for assessing the learning outcomes of students in the exam:

“5”	Given to the student who systematically worked during the semester, showed during the exam versatile and deep knowledge of the program material, is able to successfully perform the tasks provided by the program, mastered the content of basic and additional literature, realized the relationship of individual sections of the discipline, their importance for future profession, showed creative abilities in understanding and using educational material, showed the ability to independently update and replenish knowledge; level of competence - high (creative);
“4”	Given to a student who has shown full knowledge of the curriculum, successfully performs the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge of the discipline and is able to independently update and update during further study and professional activities; level of competence - sufficient (constructive-variable)

“3”	Given to a student who has shown knowledge of the basic curriculum in the amount necessary for further study and further work in the profession, copes with the tasks provided by the program, made some mistakes in answering the exam and when performing exam tasks, but has the necessary knowledge to overcoming mistakes under the guidance of a research and teaching staff; level of competence - average (reproductive)
“2”	Given to a student who did not show sufficient knowledge of the basic curriculum, made fundamental mistakes in performing the tasks provided by the program, can not without the help of the teacher to use the knowledge in further study, failed to master the skills of independent work; level of competence - low (receptive-productive)

9. Distribution of points received by applicants for higher education

The grade for the discipline consists of 50.0% of the grade for the current performance and 50.0% of the grade for the exam.

The average score for the discipline is translated into a national grade and converted into scores on a multi-point scale.

Conversion of the traditional grade for the discipline in the 200-point is carried out by the information and computer center of the university program "Contingent".

Table for traditional mark conversion into the multi-point:

National assessment for the discipline	The sum of points for the discipline
“5”	185 -200
“4”	151 -184
“3”	120 -150

Points from the discipline are independently converted into both the ECTS scale and the four-point scale. ECTS scale scores are not converted to a four-point scale and vice versa. Further accounts are carried out by the information and computer center of the university.

Conversion of traditional mark for discipline
and the amount of points according to ECTS scale

Assessment on the ECTS scale	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 next 10% of students

The ECTS scale mark is given by the ONMedU educational subdivision or the dean's office after ranking the grades in the discipline among students studying in one course and in one specialty. According to the decision of the Academic Council, the ranking of students - citizens of foreign countries is recommended to be carried out in one array.

COURSE POLICY

Deadlines and Rescheduling Policy

Students are expected to attend all lectures and practical sessions. If they missed the class, it is necessary to make up for it (according to the schedule posted on the information stand of the department and according to the permission of the dean's office, if it is needed).

The rescheduling of practical skills mastery tests is carried out during the semester in an individual manner with a decision on the time of practice.

Unsatisfactory grades are rewritten in the last month of studying the discipline, provided that the average score for the current educational activity is less than 3.00 (it is carried out according to the schedule posted on the information stand of the department).

Academic Integrity Policy

Observance of academic integrity by students of education involves:

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

It is unacceptable in educational activities for the participants of the educational process

use of prohibited auxiliary materials or technical means (cheat sheets, notes, micro-earphones, telephones, smartphones, tablets, etc.) during control measures.

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

- decrease in the evaluation results of the control work, exam, credit, etc.;
- repeated assessment (test, exam, credit, etc.);
- appointment of additional control measures (additional individual tasks, control works, tests, etc.);

Attendance and Tardiness Policy

Attending lectures and practical classes is mandatory. If you are late for more than 15 minutes, the lesson is considered missed and you need to make up for it.

Mobile devices

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

During any form of control, the use of mobile devices and their accessories is strictly prohibited.

Behavior in the audience

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

During classes, it is forbidden to: eat (with the exception of persons whose special medical condition requires otherwise - in this case, medical confirmation is required); smoke, use alcoholic and low-alcohol drinks or narcotic drugs; speak obscenely or use words that insult the honor and dignity of colleagues and teaching staff; gaff; to cause damage to the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter premises and territories); making noise, shouting or listening to loud music in the classrooms and even in the corridors during classes.

Recommended Books

Recommended literature

Basic:

1. Ataman O.V. Crash course in pathophysiology. Questions & answers : Textbook. - Vinnytsia : Nova Knyha, 2019. – 518 p.
2. Gozhenko A.I., Sharpak L., Kunyshkin A.V. et al. General and Clinical Pathophysiology : Textbook, the 5th Edition. – Vinnytsia : Nova Kniga, 2021. – 696 p.
3. Guyton A.C., Hall J.E. Textbook of medical physiology : Textbook, the 11th Edition. – Philadelphia : Elsevier Saunders, 2006. – 1152 p.
4. Krishtal N.V., Mikhnev V.A., Zayko N.N. et al. Pathophysiology : Textbook / Ed. by N.V. Krishtal, V.A. Mikhnev : Textbook, the 3rd Edition. — Kyiv : AUS Medicine Publishing, 2019. - 656 p.
5. Moroz V.M. et al. Physiology : Textbook, the 5th Edition. – Vinnytsia : Nova Kniga, 2020. – 728 p.

Additional:

1. Tommie L. Norris Porth’s Pathophysiology: Concepts of Altered Health States : Terxtbook, the 10th Edition. – NY : Lippincott Williams & Wilkins, 2018. – 1688 p.
2. Robbins and Cotran pathologic basis of disease / Ed. by Vinay Kumar, Abul K. Abbas, Jon C. Aster : Textbook, the 9th Edition. – Philadelphia : Elsevier Saunders, 2015. – 1392 p.
3. Silbernagl S. Color atlas of pathophysiology. - Stuttgart - New York, 2000. – 416 p.

13. Information resources

1. University websites and electronic resources of the “Internet” network
2. https://info.odmu.edu.ua/chair/pat_physiology/
3. Testing center - database of licensing test tasks “Krok-1”.
4. http://moz.gov.ua – Міністерство охорони здоров’я України
5. www.who.int – World Health Organization
6. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
7. http://bma.org.uk – British Medical Association