

**MINISTRY OF HEALTH PROTECTION OF UKRAINE**  
**ODESSA NATIONAL MEDICAL UNIVERSITY**  
 Department of general and clinical pathological physiology

**Syllabus of the academic discipline**

"Clinical neurophysiology and electrophysiological bases of diagnosis"

<b>Scope of the academic discipline</b>	Total number of hours per discipline: 90 hours, 3 credits. Semesters: IX-X . 5th year of study.
<b>Days, time, place of educational discipline</b>	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
<b>Teacher(s)</b>	Prof. Vastyanov R.S. Prof. Kotyuzhynska S.G. Assoc. Pospelov O.M. Assoc. Lapshin D.E. Assoc. Babii V.P. Assistant Goncharova L.V. Assistant Ostapenko I.O. Assistant Kirchev V.V. Assistant Sarakhan V.M.
<b>Contact Information</b>	Help by phone: 0976896486 Face-to-face consultations: According to the schedule posted on the information stand of the department E-mail: <a href="mailto:patfiz@onmedu.edu.ua">patfiz@onmedu.edu.ua</a> , <a href="https://t.me/patfizonmedu">https://t.me/patfizonmedu</a> , <a href="https://www.facebook.com/groups/1931771850426027">https://www.facebook.com/groups/1931771850426027</a> , <a href="https://www.instagram.com/patfiz.onmedu">@patfiz.onmedu</a>

**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.

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**ABSTRACT OF THE EDUCATIONAL DISCIPLINE**

*Subject the study of the discipline* - the general regularities of diagnosing pathological processes in the body of a sick person, which are based on the application of electrophysiological approaches and require knowledge of the processes of generation and conduction of electrical potentials in excitable tissues and cells of the body.

*Prerequisites:* study The discipline "Clinical neurophysiology and electrophysiological foundations of diagnostics" is based on the basic principles and knowledge of human anatomy, histology, medical and biological physics, normal physiology previously studied by the student and integrates with these disciplines.

*Post-requisites:* have thorough knowledge of the pathogenetic mechanisms of human disease and be able to apply them for diagnostic purposes. Ability to apply fundamental biomedical knowledge at a level sufficient to perform professional tasks in the field of health care

*The goal of the discipline:* the goal of studying the educational discipline "Clinical neurophysiology and electrophysiological foundations of diagnosis" is the formation of students of higher education is the acquisition of thorough knowledge, which is a set of previously studied medical and biological disciplines regarding the main features of the generation and conduction of electrical potentials in excitable tissues, on the basis of which it is possible to establish a final clinical diagnosis by making a reasoned decision, which is based on the analysis of the obtained objective data of the neurophysiological examination of a sick person.

*Tasks of the discipline:*

1. Basic knowledge of all issues related to the mechanisms of excitation and conduction of electrical potentials in cells, tissues and organs of the human body, their registration and the main components of electrical potentials.
2. Basic knowledge of pathogenetic mechanisms of dysfunction of excitable body tissues, features of their clinical manifestation and correlation of the clinical process with electrophysiological images (video and/or paper registration).
3. The formation of a certain amount of knowledge on the interdependence of etiopathogenetic mechanisms and electrophysiological parameters of the functioning of specific organs and organ systems that are subject to a pathological process.
4. The ability to apply the acquired knowledge with a diagnostic purpose in determining the prognosis of the disease, the terms of its clinical course and probable changes in pathogenetically justified pharmacocorrection schemes.
- 5.

*Expected results:*

*As a result of studying the academic discipline, the applicant must:*

*Know:*

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- mechanisms of pathogenic action of environmental factors and their influence on the dynamics of changes in the excitability of excitable tissues of the human body;
- correlations between electrophysiological disturbances and corresponding clinical processes

*Be able:*

- ability to establish a preliminary and clinical diagnosis based on electrophysiological studies and evaluation of their results;
- to determine the principles and nature of treatment of human disease based on the assessment of electroencephalogram, electrocorticogram, electroretinogram, electromyogram, electrocardiogram, etc.;
- solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, focusing exclusively on the results of electroneurophysiological diagnostics.

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**DESCRIPTION OF THE EDUCATIONAL DISCIPLINE**

The discipline will be taught in the form of seminars (30 hours), organization of independent work of applicants (60 hours).

*Teaching methods:* explanations, conversations, multimedia presentations, problem solving, oral survey, testing, etc.

*Content of the academic discipline*

Topic 1. Mechanisms of pathogenic action of environmental factors: physical, chemical, biological. Local and general changes in cells and organs in pathogenesis, manifestations of the action of these factors.

Topic 2. Violation of the structure, function and metabolism of body cells during oxygen starvation. Pathological changes in muscle cells (skeletal and smooth muscles of organs and systems).

Topic 3. Causes and pathogenesis of stress. General adaptive syndrome. Pathogenic effect on organs and systems.

Topic 4. Electrocardiography . Its basics, graphic display. Methods of diagnosing disorders of automaticity and conduction of the heart.

Topic 5. Clinical pathophysiology and ECG diagnosis of heart failure arrhythmias.

Topic 6. Analysis of ECG recording in hypertrophy of different parts of the heart, myocardial infarction.

Topic 7. Electromyography. Pathogenesis and functional diagnosis of peripheral nervous systems and neuromuscular disorders.

Topic 8. Pathogenesis and functional diagnosis of disorders of cerebral circulation: rheoencephalography.

*List of recommended literature*

*Main:*

1. Pathophysiology: a textbook (University III-IV years) / M.N. Zayko, Yu.V. Byts, M.V. Crystal, etc.; under the editorship M.N. Zayka, Yu.V. Bytsia, M.V. crystal — 6th ed., revised. and added - 2017. - 736 c.
2. Pathophysiology: textbook / Yu.V. Byts, H.M. Butenko, A.I. Gozhenko and others; under the editorship M.N. Zayka, Yu.V. Bytsia, M.V. crystal – 5th ed., corrected. - K.: VSV "Medicine" - 2015. - 752 p.
3. Pathophysiology: in 2 vols. T1. General pathology: textbook for students. higher education closing / O.V. Ataman - Vinnytsia: Nova kniga, 2012. - 592 p.
4. Pathophysiology: in 2 vols. T2. Pathophysiology of organs and systems / O.V. Ataman - Vinnytsia: Nova kniga, 2016. - 448 p.

*Additional:*

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1. Pathophysiology: a textbook / edited by M.N. Zaika, Y.V. Bytsia, M.V. Kryshtalya. - K.: Medicine - 2015. - 752 p.
2. Pathological physiology in questions and answers / A.V. Ataman.– Vinnytsia: New book - 2010. – 512 p.

*Electronic information resources*

1. [https://info.odmu.edu.ua/cha\\_i\\_r/pat\\_physiology/](https://info.odmu.edu.ua/cha_i_r/pat_physiology/) - information resource of the Department of General and Clinical Pathological Physiology
2. <http://moz.gov.ua> – Ministry of Health of Ukraine
3. [www.who.int](http://www.who.int) - World Health Organization
4. [www.dec.gov.ua/mtd/home/](http://www.dec.gov.ua/mtd/home/) - State Expert Center of the Ministry of Health of Ukraine
5. <http://bma.org.uk> - British Medical Association

**EVALUATION**

Assessment is carried out by scientific and pedagogical workers who conducted practical, seminar, laboratory classes in an academic group or gave lectures on this educational component. Assessment takes place at the last lesson (during the last lesson) after the end of the lesson before the beginning of the examination session in the case of the tape system of learning, in the last lesson of the educational component - in the case of the cycle system of learning.

If the academic discipline ends with credit, only the average score of the current performance is calculated, that is, the arithmetic average of all received grades on a traditional scale, rounded to two decimal places, which is converted into a 200-point scale. At the same time, the average current score, a score on a 200-point scale and an assessment on a 2-point scale: "passed" or "not passed" are displayed in the relevant documentation.

*Forms and methods of current control:* oral survey, testing, solution of situational clinical tasks, assessment of activity in class.

**Current control:** oral survey, testing, solution of situational clinical tasks, assessment of activity in class.

**Final control :** credit

**Evaluation of the current educational activity in a practical session**

1. Evaluation of theoretical knowledge on the subject of the lesson:

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- methods: survey, solving a situational clinical problem
- 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**

<b>Rating</b>	<b>Evaluation criteria</b>
Perfectly "5"	It is presented in the case when the applicant knows the program in its entirety, illustrating the answers with various examples; gives exhaustively accurate and clear answers without any leading questions; teaches the material without errors and inaccuracies; performs practical tasks of varying degrees of complexity;
Fine "4"	It is issued on the condition that the applicant knows the entire program and understands it well, answers the questions correctly, consistently and systematically, but they are not exhaustive, although the applicant answers additional questions without errors; performs practical tasks, experiencing difficulties only in the most difficult cases;
Satisfactorily "3"	It is given to the applicant 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 applicant is able to solve simplified tasks with the help of leading questions; performs practical skills, experiencing difficulties in simple cases; is not able to give a systematic answer on his own, but answers directly to directly asked questions correctly
Unsatisfactorily "2"	It is issued in cases where the applicant's knowledge and skills do not meet the requirements of a "satisfactory" assessment (does not know any of the above questions, or knows less than 50% of the questions).

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

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debt.

Test is carried out: at the last lesson before the beginning of the examination session - at ribbon system teaching, on to the last occupation - with a cyclical system of education. The credit score is the arithmetic mean of all components on a traditional four-point scale and has a value that is rounded using the statistical method with two decimal places after the decimal point.

**Distribution of points received by higher education applicants**

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**

<b>Traditional four-point scale</b>	<b>Multipoint 200-point scale</b>
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

Multi-point scale (200-point scale) characterizes the actual success rate of each applicant in mastering 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 given to students who have attended all classes in the discipline, but have not

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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**

<b>Evaluation on the ECTS scale</b>	<b>Statistical indicator</b>
AND	Top 10% achievers
IN	The next 25% of earners
WITH	The next 30% of earners
D	The next 25% of earners
IS	The next 10% of earners

Credit is awarded to a student who has completed all the tasks of the work program of the academic discipline, actively participated in seminar classes, has an average current grade of at least 3.0 and has no academic debt.

### **INDEPENDENT WORK STUDENTS OF HIGHER EDUCATION**

Independent work with recommended basic and additional literature, with electronic information resources, preparation for seminar classes, preparation of reports.

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

### **POLICY OF EDUCATIONAL DISCIPLINE**

*Deadlines and Rescheduling Policy :*

- Absences of classes for non-respectable reasons will be worked out according to the schedule of the teacher on duty.
- Absences for valid reasons are worked out according to an individual schedule with the permission of the dean's office.

*Academic Integrity Policy :*

Applicants must observe academic integrity, namely:

- independent performance of all types of work, tasks, forms of control provided for by the work program of this educational discipline;
- references to sources of information in case of use of ideas, developments, statements,



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information;

- compliance with the legislation on copyright and related rights;
- provision of reliable information about the results of one's own educational (scientific) activity, used research methods and sources of information.

Unacceptable in educational activities for participants of the educational process are:

- the use of family or official ties to obtain a positive or higher grade during any form of control of academic performance or academic merit;
- use of prohibited auxiliary materials or technical means (cheat sheets, notes, micro-earphones, telephones, smartphones, tablets, etc.) during control measures;
- going through procedures for monitoring the results of training by fake persons.

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

- a decrease in the results of assessment of the control work, assessment in class, credit, etc.;
- retaking the assessment (test, credit, etc.);
- assignment of additional control measures (additional individual tasks, control works, tests, etc.);
- conducting an additional inspection of other works authored by the violator.

*Attendance and Tardiness Policy:*

Uniform: medical gown, surgical suit, cap, mask, change of footwear.

Equipment: notebook, pen, phonendoscope.

State of health: applicants suffering from acute infectious diseases, including respiratory diseases, are not allowed to attend classes.

A student who is late for class can attend it, but if the teacher has put "nb" in the journal, he must complete it in the general order.

*Use of mobile devices :*

Mobile devices may be used by students with the permission of the instructor if they are needed for the assignment.

*Use of 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.

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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); smoking, consuming alcoholic and low-alcoholic beverages 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.