

Odessa National Medical University
Faculty Postgraduate Education
Department Clinical Chemistry and Laboratory Diagnostics

Syllabus course

" FUNDAMENTALS OF CLINICAL BIOCHEMISTRY"

Amount	120 hours / 4.0 ECTS
Year of study	2
Days, time, place	Venue: Odessa, st. Olgiivska, 4a (Main building of ONMedU), Department of Clinical Chemistry and Laboratory Diagnostics. Days and times of classes: According to the schedule of the educational department
Teacher(s)	1. Docent Stepanov Gennadii Fedorovych 2. Docent Storchylo Olha Vyacheslavivna
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Workplace	Odessa, street Olgiivska, 4a (Main building of ONMedU), Department of Clinical Chemistry and Laboratory Diagnostics.
Consultations	According to the schedule posted on the information stand of the department

COMMUNICATION

Communication with graduate students will be conducted in the classroom.

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

COURSE ABSTRACT

The subject of the discipline - biochemical processes in the body in normal conditions and in various diseases, molecular mechanisms of the formation of pathological conditions, which are based on the principles and methods of their laboratory diagnosis, forecasting and control of the course of diseases, the latest achievements in the field of clinical biochemistry and laboratory diagnostics.

Prerequisites of the course: to study the postgraduate course must have knowledge of medical biology, biophysics, medical chemistry, biological chemistry, morphological disciplines, which are a source of methodical techniques for identifying and quantifying the components of biological fluids; close interaction with clinical

medicine provides an opportunity to test in practice the real diagnostic and prognostic value of theoretical ideas and the analytical quality of laboratory research methods.

Post-requisites of the course: mastering the educational material of the discipline allows you to acquire knowledge and skills when studying related disciplines during the following years of study and apply them in further scientific and professional activities.

The purpose of the course is to increase the level of clinical thinking by teaching graduate students the practical application of modern theoretical knowledge of human biochemistry for deeper substantiation of the clinical assessment of typical patient conditions in the diagnosis of diseases, drawing up a plan for laboratory examination, treatment and control of remote results; formation of knowledge about the clinical and diagnostic value of biochemical indicators; formation of knowledge about changes in tissue metabolism in various types of pathologies; assimilation of the results of biochemical research and changes, biochemical and enzymatic indicators, which are used for the diagnosis of human diseases; analysis of biochemical processes and their regulation in ensuring the functioning of organs and systems of the human body.

Tasks of the discipline: acquisition by graduate students of integral, general, special competencies in accordance with the general and professional competencies of the educational and professional program "Medicine" of the second level of higher education, specialty 222 "Medicine" (discipline "Clinical Biochemistry").

Expected results

As a result of studying the academic discipline, a graduate student should know:

- biochemical bases of the development of pathological processes;
- peculiarities of the exchange of carbohydrates, lipids, proteins, nucleic acids, exchange of water and mineral substances in common diseases;
- the most informative clinical and biochemical indicators for diagnosing pathological processes, monitoring the course of the disease;
- clinical and biochemical characteristics of metabolism in individual organs and systems of the body when their functions are impaired.

Postgraduate students should be able to:

- draw up a plan for clinical and biochemical examination of patients with various diseases;
- to give a clinical and biochemical evaluation of the results of a patient's laboratory examination in the event of a violation of the functions of organs and systems.

COURSE DESCRIPTION

Forms and methods of education

The course is taught in the form of seminar classes (60 hours), as well as through the organization of independent work of graduate students (60 hours); total - 120 hours (4 ECTS).

The main forms of teaching the discipline are: seminar classes, independent work

of graduate students. During the teaching of the discipline, the following teaching methods are used: explanations, conversations, multimedia presentations, laboratory work, problem solving, oral survey, testing, etc.

Independent work of graduate students consists in preparation for the implementation and defense of seminar works, preparation for current and final control, execution of training tests, search for information from literary sources and the Internet, and conducting elements of scientific work.

The scientific work of graduate students is carried out in the work of groups, preparation and presentations at scientific conferences, writing articles.

Content of the academic discipline

Chapter 1. Clinical enzymology.

Section 2. Clinical biochemistry of blood.

Chapter 3. Clinical biochemistry of the cardiovascular system.

Chapter 4. Clinical biochemistry of organs of the digestive system and the hepatobiliary system. Pathobiochemistry of kidneys.

Chapter 5. Clinical biochemistry of inflammation and carcinogenesis.

List of recommended literature

Main literature

1. Clinical Biochemistry: An Illustrated Colour Text 5th Edition /A.Gaw, M.J. Murphy, R.Srivastava et al. – Churchill Livingstone, 2013. – 196 p.
2. Clinical Biochemistry: Metabolic and Clinical Aspects 2nd Edition / W.J. Marshall, S.K. Bangert. – Churchill Livingstone, 2014. – 944 p.
3. Clinical Biochemistry (Lecture Notes) 10th Edition/ P.Rae, M.Crane, R. Pattenden. - Wiley-Blackwell, 2017. – 328 p.
4. Medical Biochemistry/ Baynes J., Dominiczak M.. – Saunders, Elsevier, 2018. – 712 p.
5. Lippincott Illustrated Reviews: Biochemistry/Ferrier D. – Philadelphia :Wolters Kluwer, 2017. – 560 p.

Additional literature

1. Harper's Illustrated Biochemistry / V.W. Rodwell, D.A. Bender, K.M. Botham et al. – Mc Graw Hill Education, 2015. – 817 p.
2. Molecular Cell Biology / H. Lodish et al. - W.H. Freeman and Company, N. York. – 2016. – 1170 p.

EVALUATION

Current control

Current control is carried out at each seminar session by means of an oral survey or written control. Evaluation of the success of the study of subjects of the discipline is carried out according to the traditional 4-point scale. At the end of the study of the

discipline, the current success rate is calculated as the average current score, i.e. the arithmetic average of all the grades received by the graduate student according to the traditional scale.

Evaluation criteria for current knowledge control:

"excellent" is awarded to a graduate student who is fluent in the program material, knows how to write the main reactions, determine the main indicators in biological objects and give them a medical and biological assessment, knows how to use the acquired knowledge and skills to solve problems, is able to produce innovative solutions problems, convincingly argues the answers.

"good" is awarded to a graduate student who is fluent in the program material, knows how to write the main reactions, determine the main indicators in biological objects and give them a medico-biological assessment, but allows some insignificant mistakes (inaccuracies) in answering questions.

"satisfactory" is received by a graduate student who navigates all the questions of the program and has necessarily mastered the questions of the minimum qualification, who knows how to determine the main indicators in biological objects and give them a medico-biological assessment, but mistakes are made, among which there are a significant number of significant ones.

"unsatisfactory" is received by a graduate student who has significant gaps in knowledge of the program material, makes fundamental mistakes when explaining the laws of human metabolism, does not have the necessary practical skills.

Final control

The form of final control offset.

A graduate student is admitted to credit provided that he attends all classes, has no academic debt and has an average score for current academic activities of at least 3.00.

Final control in the form of credit is evaluated on a two-point scale:

– the grade "passed" is given to a graduate student who has completed the curriculum of the discipline, has no academic debt and has an average score for the current educational activity of at least 3.00; the level of competence is high (creative);

– grade "failed" is issued to a graduate student who has not completed the curriculum of the discipline, has academic debt (average grade below 3.0 and/or missed classes); the level of competence is low (receptive-productive).

The conversion of a traditional grade from a discipline to a 200-point grade is performed by the information and computing center of the university using the "Contingent" program according to the formula:

the average score of success (current / from the discipline) x 40.

national assessment	points
"5"	185-200
"4"	151-184
"3"	120-150

Independent work of graduate students.

Tasks for independent work are mandatory tasks that a graduate student must prepare for each lesson; taking notes, filling out a workbook, studying vocabulary, studying subtopics that do not require explanation.

The independent work of graduate students, which is provided by the topic of the lesson along with the classroom work, is evaluated during the current control of the topic in the corresponding lesson. Mastery of topics that are presented only for independent work is checked during assessment.

COURSE POLICY

Deadlines and Rescheduling Policy

Postgraduate students are expected to attend all seminar classes. If the student of higher education was absent from classes for any reason, then the practice is carried out within the deadlines set by the teacher in accordance with the "Regulations on the organization of the educational process at ONMedU" (link to the regulations on the university's website

<https://onmedu.edu.ua/wp-content/uploads/2020/01/osvitnijproces.pdf>).

Reassembly is carried out in accordance with the approved schedule.

Academic Integrity Policy

The policy of the educational component is based on the principles of academic integrity (link to the regulations on the university's website <https://onmedu.edu.ua/wp-content/uploads/2020/07/polozhennja-prodobrochesnist.pdf>) and is determined by the system of requirements that the teacher presents to the student when studying the educational component:

- ♦ independent performance of educational tasks, tasks of current and final control (current controls and credit in the discipline) 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.;
- retaking the assessment (test, exam, credit, etc.);

- appointment of additional control measures (additional individual tasks, control papers, tests, etc.)

Attendance and lateness Policy

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

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; to cause damage to the material and technical base of the university.