

FEDERAL STATE BUDGET EDUCATIONAL INSTITUTION  
OF HIGHER EDUCATION  
"ROSTOV STATE MEDICAL UNIVERSITY"  
MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

*Faculty of Education of foreign students, residents and postgraduates*

CONFIRM

Supervisor  
educational program  
/ E.S. Belousova /  
(signature) (FULL NAME.)



20\_20

**DISCIPLINE WORKING PROGRAM**

**Biochemistry**

Speciality 31.05.01 General medicine

Form of education full-time

Rostov-on-Don  
2023

## I. GOALS AND OBJECTIVES OF MASTERING THE DISCIPLINE

The goal is to develop knowledge about the basic patterns of metabolic processes that determine the state of human health and adaptation at the molecular, cellular and organ level of the whole organism and the ability to apply the acquired basic knowledge to master clinical disciplines.

Tasks:

- students study and acquire knowledge about the chemical nature of substances that make up living organisms, their transformations, the connection of these transformations with the activity of organs and tissues, the regulation of metabolic processes and the consequences of their violation;
- developing in students the ability to use laboratory equipment and reagents in compliance with safety regulations, analyze the data obtained from the results of biochemical research and use the acquired knowledge to solve situational problems that simulate the functioning of the human body in normal conditions and in pathology;
- developing skills in analytical work with information (educational, scientific, reference literature and other sources), with information technologies, diagnostic research methods.

## II. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The process of studying the discipline is aimed at developing the following competencies in accordance with the Federal State Educational Standard of Higher Education and the EP of Higher Education in this specialty:

- ability for abstract thinking, analysis, synthesis (OK-1);
- readiness To use main physico-chemical, mathematical And othenatural scientific concepts and methods for solving professional problems (OPK-7).

## III. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF EP VO

2.2.1. The academic discipline is basic.

2.2.2. To study this academic discipline, you need knowledge, skills and knowledge formed by the previous discipline "Chemistry".

2.3. Discipline biochemistry creates preconditions formation specified competenciesdisciplines: pharmacology, pathophysiology.

## IV. CONTENT AND STRUCTURE OF DISCIPLINE

The labor intensity of the discipline is 11 ZE, 396 hours

### 4.1. Sections of the discipline studied in 2-4 semesters

No. section a	Section name	Number of hours			
		Total	Contact work		SRS
			L	P	
<b>Semester 2</b>					
1	Enzymes. Biological membranes. Introduction to metabolism. Bioenergy.	48	10	18	20
2	Carbohydrate metabolism.	41	6	15	20

3	Metabolism of lipids and lipoproteins. Lipid peroxidation.	49	10	15	24
4	Nitrogen exchange.	6	6	0	0
Total		144	32	48	64
Interim certification form		test with grade			
<b>Semester 3</b>					
4	Nitrogen exchange.	37	2	15	20
5	Hormonal regulation metabolic processes. Biochemistry of nutrition.	54	12	18	24
6	Biochemistry of blood and liver.	43	8	15	20
7	Water-electrolyte And mineralexchange. Biochemistry of the kidneys	6	6	0	0
8	Biochemistry of soft tissues.	4	4	0	0
Total		144	32	48	64
Interim certification form		test			
<b>Semester 4</b>					
7	Water-electrolyte And mineralexchange. Biochemistry of the kidneys.	18	0	10	8
8	Biochemistry of soft tissues.	22	4	10	8
9	Matrix biosyntheses. DNA technology.	32	12	12	8
		72	16	32	24
Interim certification form - exam		36			
Total		108			
Total by discipline		<b>396</b>			

## 4.2. Contact work

### Lectures

No. section a	No. lectures	Lecture topic	Number of hours
<b>Semester 2</b>			
1	1	Introduction to biochemistry. Enzymes: properties, classification, nomenclature.	2
	2	Regulation of enzyme activity.	2
	3	General pathway of substance catabolism	2
	4	Energy exchange. The respiratory chain of mitochondria.	2
	5	Structure and functions of biological membranes. Introduction in the biochemistry of hormones..	2

	6	Carbohydrates: functions, digestion in the gastrointestinal tract. Glycogen metabolism disorders.	2
2	7	Pathways for glucose breakdown: glycolysis (aerobic and anaerobic), pentose phosphate pathway.	2
	8	Synthesis glucose from substances non-carbohydrate nature - gluconeogenesis, regulation.	2
3	9	Lipids: functions, digestion in the gastrointestinal tract, transport of exogenous fats.	2
	10	Biosynthesis of IVFA, TAG, phospholipids, regulation. The role of VLDL in fat transport. Eicosanoids: structure and biological role.	2
	eleven	Disintegration of TAG, phospholipids, IVH, regulation. Ketone bodies: functions, synthesis, biological role.	2
	12	Cholesterol: functions, synthesis, regulation, transport. Bile acids: role, synthesis, disorders.	2
	13	Lipoprotein metabolism and its disorders.	2
4	14	Digestion of proteins in the gastrointestinal tract. "Rotting" of proteins in the intestines	2
	15	Common pathways of amino acid metabolism. Biogenic amines: synthesis, inactivation, birole.	2
	16	Ammonia exchange. Biosynthesis of urea.	2
Just in a semester			32
<b>Semester 3</b>			
4	1	Exchange of nucleotides, nucleosides and nitrogenous bases.	2
5	2	Regulatory systems body. Biochemistry steroid hormones.	2
	3	Hormones - derivatives of AK: adrenaline and thyroid hormones.	2
	4	Biochemistry of hormones of peptide and protein nature.	2
	5	Molecular mechanisms of the development and course of diabetes mellitus. Metabolic syndrome	2
	6	Biochemistry of nutrition. Vitamins: water- and fat-soluble.	2
	7	Nutritional diseases.	2
6	8	Biochemistry of blood formed elements. Blood plasma proteins	2
	9	Collapsing And anticoagulants systems blood. Fibrinolysis.	2
	10	Iron metabolism in the body. Anemia	2
	eleven	Homeostatic and detoxification functions of the liver.	2
7	12	Water-electrolyte and phosphate-calcium metabolism.	2
	13	Biochemistry of the excretory system. Principles of regulation of CBS and its violations.	2
	14	Individual biochemical profile body. Alcoholism and drug addiction.	2
8	15	Biochemistry of muscle tissue.	2
	16	Biochemistry myocardium. Laboratory diagnostics muscle diseases.	2
Just in a semester			32
<b>Semester 4</b>			
8	1	Biochemistry of connective tissue. Biochemistry of nervous tissue.	2
	2	Biochemical basis for the development of atherosclerosis.	2
	3	Matrix biosyntheses: repair, transcription.	2

	4	Matrix biosyntheses: translation. Operon theory.	2
	5	SRO in normal and pathological conditions. Apoptosis.	2
9	6	Biochemical basis of carcinogenesis.	2
	7	Use of DNA technologies in medicine: PCR and sequencing methods. Gene therapy	2
	8	Laboratory diagnosis of socially significant diseases.	2
Just in a semester			16
<b>Total by discipline</b>			<b>80</b>

### Practical lessons

No. section a	No. LR	Themes	Number in hours	Forms of those control
<b>Semester 2</b>				
1	1	Techniques safety. Classification, and nomenclature of enzymes.	3	Survey, testing
	2	Properties of enzymes.	3	Survey, testing
	3	Regulation of enzyme activity.	3	Survey, testing
	4	General pathway of substance catabolism	3	Survey, testing
	5	Energy exchange. The respiratory chain of mitochondria.	3	Survey, testing
	6	<b>Colloquium 1</b>		3
2	7	Structure and functions of biological membranes. Introduction to the biochemistry of hormones.	3	Survey, testing
	8	Carbohydrates: functions, digestion V Gastrointestinal tract. Exchange glycogen, regulation, disorders.	3	Survey, testing
	9	Pathways of glucose breakdown: glycolysis (aerobic and anaerobic). pentose phosphate pathway.	3	Survey, testing
	10	Synthesis of glucose from substances of non-carbohydrate nature - gluconeogenesis, regulation. Metabolism of fructose and galactose, disorders.	3	Survey, testing
	eleven	<b>Colloquium 2</b>		3
3	12	Lipids: functions, digestion 1st resynthesis. Transport of exogenous fats.	3	Survey, testing
	13	Biosynthesis of IVFA, TAG, regulation. Role VLDL in fat transport.	3	Survey, testing
	14	Decay of TAG, phospholipids, IVH, regulation. Eicosanoids: structure and biological role. Metabolism of ketone bodies. Ketonemia, ketonuria, reasons for their development.	3	Survey, testing
	15	Cholesterol: functions, synthesis, regulation, transport. Bile acids: role, synthesis, disorders.	3	Survey, testing
	16	<b>Colloquium 3</b>		3
Just in a semester			<b>48</b>	
<b>Semester 3</b>				
	1	Digestion of proteins in the gastrointestinal tract. "Rotting" of proteins in the intestines	3	Survey, testing

4	2	Common pathways of amino acid metabolism. Biogenic amines: synthesis, inactivation, biorole.	3	Survey, testing
	3	Ammonia exchange. Biosynthesis of urea.	3	Survey, testing
	4	Exchange of nucleotides, nucleosides and nitrogenous bases.	3	Survey, testing
	5	<b>Colloquium 4</b>	3	Survey
5	6	Regulatory systems of the body. Biochemistry of steroid hormones	3	Survey, testing
	7	Hormones - derivatives of AK: adrenalineAnd thyroid hormones.	3	Survey, testing
	8	Biochemistry of hormones of peptide and protein nature.	3	Survey, testing
	9	Molecular mechanisms of the development and course of diabetes mellitus. Metabolic syndrome	3	Survey, testing
	10	Biochemistry of nutrition. Nutritional diseases.	3	Survey, testing
	eleven	<b>Colloquium 5</b>	3	Survey
6	12	Biochemistry uniform elementsblood.Proteins blood plasma	3	Survey, testing
	13	Blood coagulation and anticoagulation systems. Fibrinolysis.	3	Survey, testing
	14	Iron metabolism in the body. Anemia	3	Survey, testing
	15	Homeostatic and detoxification functions of the liver.	3	Survey, testing
	16	<b>Colloquium 6</b>	3	Survey
Just in a semester			<b>48</b>	
<b>Semester 4</b>				
7	1	Water-electrolyte and mineral metabolism.	2	Survey, testing
	2	Biochemistry of the excretory system.	2	Survey, testing
	3	Principles of regulation of CBS and its violations.	2	Survey, testing
	4	Individual biochemical profile body.Alcoholism and drug addiction.	2	Survey, testing
	5	<b>Colloquium 7</b>	2	Survey
8	6	Biochemistry of muscle tissue.	2	Survey, testing
	7	Biochemistry myocardium. Laboratory diagnosticsmuscle diseases.	2	Survey, testing
	8	Biochemistry of connective tissue. Biochemistry of nervous tissue.	2	Survey, testing
	9	Biochemical basis for the development of atherosclerosis.	2	Survey, testing
	10	<b>Colloquium 8</b>	2	Survey
9	eleven	Matrix biosyntheses: repair, transcription.	2	Survey, testing
	12	Matrix biosyntheses: translation. Operon theory.	2	Survey, testing
	13	SRO in normal and pathological conditions. Apoptosis.	2	Survey, testing
	14	Biochemical basis of carcinogenesis.	2	Survey, testing
	15	Use of DNA technologies in medicine: PCR and sequencing methods. Gene therapy.	2	Survey, testing
	16	<b>Colloquium 9</b>	2	Survey
Just in a semester			<b>32</b>	

	<b>Total by discipline</b>	<b>128</b>	
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### **4.3. Independent work of students**

<b>Section number</b>	<b>Type of independent work</b>	<b>Number of hours</b>	<b>form of control</b>
<b>Semester 2</b>			
1	Preparation for current control.	20	Survey Testing
2	Preparation for current control.	20	
3	Preparation for current control. Interim certification.	24	
Just in a semester		64	
<b>Semester 3</b>			
4	Preparation for current control.	20	Survey Testing
5	Preparation for current control.	24	
6	Preparation for current control. Interim certification.	20	
Just in a semester		64	
<b>Semester 4</b>			
7	Preparation for current control.	8	Survey Testing
8	Preparation for current control.	8	
9	Preparation for current control.	2	
	Preparation for intermediate certification.	6	Interview
Just in a semester		24	
<b>Total by discipline</b>		<b>152</b>	

## **V. ASSESSMENT FUND FOR CURRENT CONTROL AND INTERMEDIATE CERTIFICATION**

Fund of assessment tools for determining the level of formation of competencies as a result of mastering the discipline, it is an appendix to the work program.

## **VI. EDUCATIONAL AND METHODOLOGICAL SUPPORT OF DISCIPLINE**

### **6.1. Main literature.**

1. Severin E.S., Biochemistry [Electronic resource]: textbook / ed. E. S. Severina. - 5th ed., rev. and additional - M.: GEOTAR-Media, 2016. - 768 p. - ISBN 978-5-9704-3762-9 - Mode access: <http://www.studmedlib.ru/book/ISBN9785970437629.html>



2. Avdeeva L.V., Biochemistry [Electronic resource] / Avdeeva L.V., Aleynikova T.L., Andrianova L.E., Belushkina N.N., Volkova N.P., Vorobyova S.A., Golenchenko V. A.A., Gubareva A.E., Korlyakova O.V., Likhacheva N.V., Pavlova N.A., Rubtsova G.V., Silaeva S.A., Siluyanova S.N., Titova T.A. . - M.: GEOTAR-Media, 2014. - 752 p. - ISBN 978-5-9704-3043-9 - Mode access:<http://www.studmedlib.ru/book/ISBN9785970430439.html>
3. Gubareva A.E., Biological chemistry. Situational tasks and tests [Electronic resource]: textbook. manual / A. E. Gubareva [etc.]; edited by A. E. Gubareva. - M.: GEOTAR-Media, 2016. - 528 p. - ISBN 978-5-9704-3561-8 - Access mode: <http://www.studmedlib.ru/book/ISBN9785970435618.html>

## 6.2. Additional literature.

1. Rukavitsyna O.A., Anemia [Electronic resource] / ed. O.A. Rukavitsyna - M.: GEOTAR-Media, 2016. - 256 p. - ISBN 978-5-9704-3978-4 - Access mode: <http://www.studmedlib.ru/book/ISBN9785970439784.html>
2. Severin S.E., Biological chemistry with exercises and tasks [Electronic resource]: textbook / ed. S.E. Severina. - 3rd ed., stereotypical. - M.: GEOTAR-Media, 2016. - 624 p. - ISBN 978-5-9704-3971-5 - Access mode:<http://www.studmedlib.ru/book/ISBN9785970439715.html>

## 6.3. Internet resources

	<b>ELECTRONIC EDUCATIONAL RESOURCES</b>	<b>Access to the resource</b>
1.	<b>Electronic library RostGMU</b> [Electronic resource]. - Access mode: <a href="http://109.195.230.156:9080/opacg/">http://109.195.230.156:9080/opacg/</a>	Unlimited access
2.	<b>Student Advisor</b> [Electronic resource]: EBS. – M.: LLC "IPUZ". - Access mode: <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>	Unlimited access
4.	<b>UpToDate</b> [Electronic resource] / Wolters Kluwer Health. – :DBAccess mode: <a href="http://www.uptodate.com">www.uptodate.com</a>	Unlimited access
6.	<b>Scientific electronic library eLIBRARY</b> [Electronic resource]. - Access mode: <a href="http://elibrary.ru">http://elibrary.ru</a>	Open access
7.	<b>National Electronic Library</b> [Electronic resource]. - Access mode: <a href="http://neb.rf/">http://neb.rf/</a>	Access from library computers
8.	<b>Scopus</b> [Electronic resource] / Elsevier Inc., Reed Elsevier. – Electronic data. – Philadelphia: Elsevier BV, PA, 2015. – Access mode: <a href="http://www.scopus.com/">http://www.scopus.com/</a> (National project)	Unlimited access
10.	<b>Single window of access to information resources</b> [Electronic resource]. - Access mode: <a href="http://window.edu.ru/">http://window.edu.ru/</a> [7.02.2019].	Open access
eleven.	<b>Russian education. Federal educational portal</b> [Electronic resource]. - Mode access: <a href="http://www.edu.ru/index.php">http://www.edu.ru/index.php</a> [7.02.2019].	Open access
12.	<b>Federal Electronic Medical Library of the Russian Ministry of Health</b> [Electronic resource]. - Access mode: <a href="http://www.femb.ru/feml/">http://www.femb.ru/feml/</a> , <a href="http://feml.scsmr.rssi.ru">http://feml.scsmr.rssi.ru</a> [7.02.2019].	Open access
13.	<b>Medline</b> (PubMed, USA) [Electronic resource]. - Access mode: <a href="https://www.ncbi.nlm.nih.gov/pubmed/">https://www.ncbi.nlm.nih.gov/pubmed/</a> [7.02.2019].	Open access
14.	<b>Free Medical Journals</b> [Electronic resource]. - Access mode: <a href="http://freemedicaljournals.com">http://freemedicaljournals.com</a> [7.02.2019].	Open access
19.	<b>Open access journals in Russian</b> [Electronic resource].	Open access

#### 6.4. Guidelines for students on mastering the discipline

An important condition for successfully mastering the discipline of Biochemistry is the creation of a system of proper organization of work that allows you to distribute the educational load evenly in accordance with the schedule of the educational process. Drawing up a work plan can be of great help in this. Its presence will allow you to subordinate your free time to study purposes and work more successfully and efficiently. It is necessary to exercise self-control, which is a necessary condition for successful study. If something is left undone, time must be found to complete that part of the work. It is recommended to complete all tasks for practical classes, as well as tasks assigned for independent work, immediately after the corresponding topic of the lecture course, which contributes to better assimilation of the material, allows you to promptly identify and eliminate “gaps” in knowledge, systematize previously covered material, and proceed on its basis to mastering new knowledge and skills.

*\* Preparation for lectures.*

Acquaintance with the discipline occurs already at the first lecture, where the student is required not only to pay attention, but also to independently prepare notes. When working with lecture notes, it is necessary to take into account the fact that some lectures provide answers to specific questions on the topic, while others only reveal the relationships between phenomena, helping the student understand the deep processes of development of the subject being studied, both in history and at the present time.

Lecture note-taking is a complex type of university classroom work that involves intense mental activity of the student. A note is useful when the most essential things are written down and done by the student himself. There is no need to try to write down the entire lecture verbatim. This kind of “note-taking” does more harm than good. It is advisable to first understand the main idea presented by the lecturer and then write it down. It is advisable to record on one page of the sheet or leave fields on which later, when working independently with notes, you can make additional notes and mark unclear places.

It is advisable to develop your own system of abbreviations, abbreviations and symbols. However, when further working with notes, it is better to replace the symbols with ordinary words for quick visual perception of the text.

When working on lecture notes, it is always necessary to use not only the textbook, but also the literature that the lecturer additionally recommended. Exactly like this

Serious, painstaking work with lecture material will allow you to deeply master the theoretical material.

*\* Preparation for practical classes.*

The student should begin preparing for each lesson by familiarizing himself with the lesson plan, which reflects the content of the proposed topic. Careful thinking through and study of the plan's issues is based on studying the current lecture material, and then studying the required and additional literature recommended for this topic. All new concepts on the topic being studied must be memorized and included in a glossary, which should be kept from the very beginning of the course.

The result of such work should be manifested in the student's ability to freely answer theoretical questions of the workshop, his speech and participation in a collective discussion of issues on the topic being studied, the correct completion of practical assignments and tests.

In the process of preparing for practical classes, students need to pay special attention to independent study of the recommended literature. Despite the completeness of the lecture notes, it is impossible to present all the material in it due to the limit of classroom hours. Therefore, independent work with textbooks, teaching aids, scientific and reference literature, materials from periodicals and the Internet is the most effective method of acquiring additional knowledge, allows you to significantly intensify the process of mastering information, promotes a deeper assimilation of the material being studied, and shapes students' attitude to a specific problem.

*\* Preparation for the colloquium.*

*Colloquium* is carried out in order to find out and evaluate the level of knowledge of students. It is carried out after the completion of major thematic sections in the form of a survey. Students are asked to answer a series of questions to test the knowledge acquired during lectures and classes. This form of training allows you to systematize knowledge on the subject and delve into the essence of the issue being studied. Teachers, in turn, receive an additional opportunity to control and assess the level of knowledge of students.

In order to successfully pass the colloquium and receive a high grade based on its results, you need to properly prepare for it. First of all, you need to familiarize yourself in advance with the topics of the colloquium and the issues that will be discussed at it. Then literature on this topic is selected and answers to questions are sought. Each student, working with literature on a specific topic, regardless of what topic is given, should be able to highlight the main points in the material. Also, when searching for information, a student can use one or several sources at once, citing them in his answer.

It is worth noting that a student who regularly refreshes the material covered in his memory usually does not experience problems when preparing and passing the colloquium. Therefore it is possible

advise all students to re-read their notes when returning from lectures. So knowledge is gradually, and most importantly - reliably, deposited and accumulated in the head. And when the date of the colloquium approaches, it will be enough just to quickly glance at the answers to the questions in order to confidently give an answer in class.

By revealing a given topic during a colloquium, students express their own thoughts, showing how they have mastered the material. This allows the teacher to find out the level of knowledge of students and differentiate them by assigning one point or another.

\* Recommendations for working with literature.

It is advisable to start working with literature by studying general works on the topic, as well as textbooks and teaching aids. Next, it is recommended to move on to the analysis of monographs and articles that consider individual aspects of the problems studied in the course, as well as official materials and unpublished documents (research papers, dissertations), which may contain the main issues of the problem being studied.

Depending on the results of the introductory reading, a further method of working with the source is chosen. If solving the problem requires studying certain fragments of the text, then the selective reading method is used. If the book does not have a detailed table of contents, the student should pay attention to the subject and name indexes.

Selected fragments or the entire text (if it is entirely related to the topic) require thoughtful, leisurely reading with "mental elaboration" of the material. Such reading involves highlighting: 1) the main thing in the text; 2) main arguments; 3) conclusions. Particular attention should be paid to whether the thesis follows from the arguments or not.

It is clear that the ability to work with text in this way does not come immediately. The best way to learn to highlight the main points in a text, to grasp the problematic nature of statements, and to evaluate the author's position is comparative reading, during which the student gets acquainted with different opinions on the same issue, compares the weight and evidence of the arguments of the parties and draws a conclusion about the greatest persuasiveness of that one. or other position.

If in the literature there are different points of view on a particular issue due to the complexity of past events and legal phenomena, they cannot be rejected without understanding them. If there are discrepancies between the authors, it is necessary to find a rational grain in each of them, which will allow a deeper understanding of the subject of study and a more critical assessment of the issues being studied. Getting acquainted with the special positions of the authors, you need to identify their similar judgments, arguments, conclusions, and then compare them with each other and apply the one that is more convincing.

The next stage of working with literary sources is the creation of notes that capture the main theses and arguments. It is advisable to take notes on large specialized works of a monographic nature in separate notebooks. Here it is important to remember that notes are written on one side of the sheet, with margins and sufficient line spacing for corrections and remarks (these rules are observed for ease of editing). If quotations are given in the notes, then an indication of the source must certainly be given (author, title, imprint, Page No.). Subsequently, this information can be used when writing the text of an essay or other assignment.

*Thus, when working with sources and literature, it is important to be able to:*

- compare, compare, classify, group, systematize information in accordance with a specific educational task;
- summarize the information received, evaluate what you listened to and read;
- record the main content of messages; formulate, orally and in writing, the main idea of the message; draw up a plan, formulate theses;
- prepare and present detailed reports such as a report;
- work in different modes (individually, in pairs, in groups), interacting with each other;
- use abstracts and reference materials;
- control your actions and the actions of your comrades, objectively evaluate your actions;
- seek help and additional clarification from the teacher or other students.
- use linguistic or contextual guesses, dictionaries of various kinds, various kinds of hints, supports in the text (keywords, text structure, preliminary information, etc.);
- use paraphrases, synonymous means, words that describe general concepts, explanations, examples, interpretations when speaking and writing, "word creation";
- repeat or paraphrase replica interlocutor V confirmation understanding his statement or question;
- ask your interlocutor for help (clarify the question, ask again, etc.);
- use facial expressions and gestures (in general and in cases where linguistic means are not enough to express certain communicative intentions).

*\* Preparation for intermediate certification.*

When preparing for intermediate certification, it is advisable to:

- carefully study the list of questions and determine which sources contain the information necessary to answer them;
- carefully read the recommended literature;
- make short notes of answers (answer plans).

## VII. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

### *Generaleducational and laboratory equipment, technical and electronic means*

Name of special premises and premises for study work	Equipment of special premises and rooms for independent work
<p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214 (No. 29, Letter A-Z, 1st floor) Lecture room No. 3 Classroom for conducting lecture-type classes.</p>	<p>Room staffed specialize d educational furniture (150 seats) Technical teaching aids used to present educational information to a large audience: multimedia presentation complex.</p>
<p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214 (No. 29, Letter A-Z, 1st floor) Lecture room No. 4 Classroom for conducting lecture-type classes.</p>	<p>Room staffed specialize d educational furniture (150 seats) Technical teaching aids used to present educational information to a large audience: multimedia presentation complex.</p>
<p>344022, Rostov region, Rostov-on-Don Don, per. Nakhichevan, 38/57-59/212-214 (No. 29, Letter A-Ya, 2nd floor, 4th floor, Letter B-A, 6th floor) 344022, Rostov region, Rostov-on-Don Don, st. Adygei/Pushkinskaya 12/191. Special premises For independent work - reading rooms libraries, audience departments physicists, Automation and Quality Monitoring Department training.</p>	<p>Computer equipment with connection to Internet and providing access to EIOS RostSMU</p>

### **Educational and laboratory equipment, technical and electronic means** *Department of General and Clinical Biochemistry No. 1*

Namespecial rooms and premises for educational work	Equipping special rooms and rooms for independent work
<p>344022, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214 (No. 41, Liter A-Z, 1st floor). Lecture room No. 3. Training room audience for classes lecture type.</p>	<p>The premises are equipped with specialized educational furniture (100 seats). Technical teaching aids used to present educational information to a large audience: a multimedia presentation complex.</p>
<p>lane Nakhichevan, 38/57-59/212-214 (No. 41, Liter AND I, 4th floor). Audiences No. 406, 407, 408, 408, 409, 432 room for practical classes, group and individual consultations, current control, intermediate certifications.</p>	<p>The premises are equipped with specialized furniture. Tables - 11 pcs., chairs - 21 pcs., thermostat - 1 pc. KFK-2 colorimeter - 1 pc., drying cabinet - 2 pcs., thermostat - 1 pc., SF-46 spectrophotometer - 1 pc. centrifuge - 1. Tstandard sets of professional models with the results of laboratory and instrumental research methods, sets of demonstration equipment and educational visual aids, providing thematic illustrations: demonstration material by topic - 8. Visual materials by topic - 4.</p>

<b>lane Nakhichevan, 38/57-59/212-214 (No. 41,</b>	The premises are equipped with specialized furniture: 5 laboratory tables, 18 chairs, analytical balances ALC-
<b>Liter AND I, 4th floor).Laboratory No. 401</b>	110D2; apparatus for shaking liquids; apparatus for electrophoresis EPAU 20-50; technical scales VA-4M; homogenizer GGIN-302; spectrophotometer LOMO SF-46; colorimeter KFK-2MP; distiller D-25; surgical operating set; stopwatch; fluorimeter HITACHI F-3000; refrigerator "Dnepr"; drying cabinet - 4 pcs., fume hood - 1 pc. pH meter - 1 pc.
<b>lane Nakhichevan, 38/57-59/212-214 (No. 41, Liter AND I, 4th floor) Room No. 434.</b> Pstorage space and preventive service education al equipment	Furniture for storing educational equipment: shelving. Preventive Maintenance Tools educational equipment.

**Educational and laboratory equipment, technical and electronic means**  
**Department of General and Clinical Biochemistry No. 2**

<b>Name of special premises and premises for independent work</b>	<b>Equipping special rooms and rooms for independent work</b>
<b>344022, Rostov region, Rostov-on-Don, laneNakhichevansky, 38/57-59/212-214 (No. 29, Liter A-Ya, 7th floor)Auditoriums: No. 712, 714, 715, 722, 723</b> - premises for practical classes, group and individual consultations, consultations ongoing monitoring of intermediate certification.	The premises are equipped with: - <i>specialized furniture</i> : teaching tables (14 pcs.), table for the teacher (1 pc.), chairs (29 pcs.), teaching board (1 pc.), hanger (1 pc.), Lessar split system (1 pc.), - technical teaching aid: TV (1 pc.),
<b>344022, Rostov region, Rostov-on-Don, laneNakhichevansky, 38/57-59/212-214 (No. 29, Liter A-Ya, 7th floor)Auditorium No. 718 - a room for conducting practical classes, group and individual consultations, current control intermediate certification.</b>	The premises are equipped with: - <i>specialized furniture</i> : teaching tables (38 pcs.), teacher's table (1 pc.), chairs (76 pcs.), teaching board (1 pc.), hanger (3 pcs.), Oasis split system (1 pc.), - <i>technical training tool</i> : Samsung TV (1 pc.),

<p>344022, Rostov region, Rostov-on-Don, laneNakhichevansky, 38/57-59/212-214 (No. 29, Liter A-Ya, 7th floor) Auditorium No. 719 - room for holding computer testing, access to electronic resources of the university.</p>	<p>The room is equipped with:</p> <ul style="list-style-type: none"> <li>- <i>computer equipment</i>: Lenovo monoblock (14 pcs.), with Internet connection and access to the EIOS RostSMU</li> <li>- <i>specialized furniture</i>: desk (1 piece); oval table (1 pc.), computer chairs (16 pcs.), hanger (1 pc.), bedside table (2 pcs.), Daewoo wall heater (1 pc.), Rovex split system (1 pc.),</li> <li>- <i>technical training tool</i>: Telefunken TV (1 pc.),</li> </ul>
<p>344022, Rostov region, city Rostov-on-Don, lane Nakhichevansky, 38/57-59/212-214 (No. 29, Liter A-Ya, 7th floor) Laboratory No. 717 is a room for conducting laboratory classes.</p>	<p>The premises are equipped with:</p> <ul style="list-style-type: none"> <li>- <i>specialized furniture</i>: laboratory table - (5 pcs.), fume hood (1 pc.), laboratory stool (5 pcs.), mobile cart - (1 pc.), rolling cabinet (7 pcs.), side cabinet (1 pc.) , cabinet for reagents (1 pc.), sink (1 pc.), SARMAT hand dryer (1 pc.).</li> <li>- <i>laboratory equipment</i>: MT pH meter (1 pc.), Millpore double-distiller (1 pc.), MT analytical balance (1 pc.), ice maker (1 pc.), Biomed microscope 6 (1 pc.), heating plate PL 1818 (1 pc.), Oxygraph Plus system (1 pc.), Bio-Rad gel electrophoresis system (1 pc.), Implen photometer (1 pc.), Pozis refrigerator (1 PC.), Minispin centrifuge (1 pc.).</li> </ul>
<p>344022, Rostov region, Rostov-on-Don, laneNakhichevansky, 38/57-59/212-214 (No. 29, Liter A-Ya, 7th floor) Laboratory No. 721 is a room for conducting laboratory classes.</p>	<p>The premises are equipped with:</p> <ul style="list-style-type: none"> <li>- <i>specialized laboratory furniture</i>: titration table (1 pc.), laboratory table (5 pcs.), island table (1 pc.), metal end table (2 pcs.), corner table on a metal support stand (1 pc.), general fume hood (1 pc.), general laboratory cabinet (1 pc.), shelf (1 pc.), mezzanine - (4 pcs.), Ariston refrigerator (1 pc. ),</li> <li>- <i>laboratory equipment</i>: water distiller Liston (1 pc.), dry air thermostat (1 pc.), technical scales MT - 1 pc.),</li> </ul>