

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.)

" 30 " *Belousova* 20 23

DISCIPLINE WORKING PROGRAM

• **FUNCTIONAL DIAGNOSTIC METHODS IN CARDIOLOGY**

Speciality 31.05.01 General medicine

Form of education full-time

Rostov-on-Don
2023

Work program of the discipline “Functional diagnostic methods in cardiology” in the specialty 05/31/01 “Medicine” considered at a meeting of the Department of Internal Medicine No. 1

Protocol No. 1 dated August 26, 2022

And about. head Department of Internal Medicine No. 1 _____ Prof. Chesnikova A.I.

Library director: “Agreed”

“ ” _____ 20 _____
signature full name

I. GOALS AND OBJECTIVES OF MASTERING THE DISCIPLINE

1.1. The goal of the elective course “Functional diagnostic methods in cardiology” is to develop an in-depth understanding of modern instrumental methods for studying the cardiovascular system.

1.2. Taskselective course:

1. Master the methods and techniques of traditional electrocardiography in standard and additional leads.
2. Learn the basic principles of clinical ECG analysis.
3. Study the most important criteria for diagnosing electrocardiographic syndromes and heart diseases.

II. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

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

2.1. Universal:

2.2. General professional:

2.3. Professional:

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

3.1. Discipline "Functional diagnostic methods in cardiology" is an elective discipline.

IV. CONTENT AND STRUCTURE OF DISCIPLINE

Labor intensity of the discipline in 3 hours 108

4.1. Sections of the discipline studied in the 12th semester

No. section	Section name	Number of hours					SRO
		Total	Contact work				
			L	WITH	ETC	LR	
Semester 12							
1	24-hour blood pressure monitoring	18	3	-	8	-	7
2	Holter ECG monitoring	18	3	-	8	-	7
3	Load tests	18	2	-	8	-	8
4	Ultrasound echocardiographic examination	18	3	-	8	-	7
5	Transesophageal pacing	18	3	-	8	-	7
6	Coronary angiography	18	2	-	8	-	8
	Interim certification form	-	Test				
	<i>Total:</i>	108	16		48	-	44

SRO- independent work of students

L- lectures

WITH– seminars

LR –laboratory works

ETC- practical lessons

4.2. Contact work

Lectures

No. section	No. lectures	Lecture topics	Number of hours
Semester 12			
1	1	24-hour blood pressure monitoring A brief history of the development of the ABPM method. Indications for ABPM. Advantages and limitations of the ABPM method. Typical mistakes when conducting ABPM. Methodological aspects of ABPM.	3
2	2	Holter ECG monitoring ECG for coronary heart disease. ECG for ACS. ECG for STEMI and STEMI ECG for heart diseases and syndromes: ECG for pericarditis. ECG for myocarditis. Acute cor pulmonale. Syndrome of early ventricular repolarization.	3
3	3	Functional ECG stress tests. Bicycle ergometer test. Methodology for conducting an ECG stress test. Methodology for assessing stress testing.	2
4	4	Ultrasound echocardiographic examination	3
5	5	Transesophageal pacing Indications for PTEX. Technique for conducting PTEX.	3
6	6	Coronary angiography	2
		Total for the semester	16

Practical work

No. section	No. ETC	Themespractical work	Number of hours	Forms of current control
Semester 12				

1	1	24-hour blood pressure monitoring Evaluation of ABPM results. Analysis of the effectiveness of the performed ABPM. When carrying out ABPM, the following quantitative indicators are analyzed: Average values of blood pressure and heart rate, Pulse blood pressure, Indicators of "pressure load", Blood pressure variability, Indicators of the circadian rhythm of blood pressure, 5. Morning rise in blood pressure. Formation of a conclusion.	8	Test control Interview Solving clinical problems
2	2	Holter ECG - monitoring: ECG for rhythm disturbances (sinus tachycardia, sinus bradycardia, sinus arrhythmia, extrasystole, paroxysmal tachycardia, atrial flutter and fibrillation, ventricular flutter and fibrillation) and conductivity (sinoatrial block, interatrial (intraatrial) block, atrioventricular block, Frederick's syndrome, block of the legs and branches of the His bundle).	8	Test control Interview Solving clinical problems
2	3	Functional ECG stress tests. Bicycle ergometer test. Methodology for conducting an ECG stress test. Methodology for assessing stress testing.	8	Test control Interview Solving clinical problems
4	4	Ultrasound echocardiographic examination	8	Test control Interview Solving clinical problems
5	5	Transesophageal pacing TEE in the diagnosis of coronary artery disease.	8	Test control Interview Solving clinical problems
6	6	Coronary angiography	8	Test control Interview Solving clinical problems
Total for the semester			48	

4.3. Independent work of students

No. section	Type of independent work of students	Number of hours	Forms of current control
Semester 12			
1	24-hour blood pressure monitoring Using smadas to assess the effectiveness of therapy.	7	Oral survey Test tasks Clinical objectives

No. section	Type of independent work of students	Number of hours	Forms of current control
2	Holter ECG monitoring premature excitation of the ventricles: Wolf-Parkinson-White syndrome (WPW syndrome); Short PQ(R) interval syndrome (CLC syndrome). Left atrial hypertrophy. Right atrial hypertrophy. Acute atrial overload. Left ventricular hypertrophy. Right ventricular hypertrophy (types: rSR, qR, S). Combined ventricular hypertrophy. Acute ventricular overload. ECG for atrial and ventricular hypertrophy: Left atrial hypertrophy. Right atrial hypertrophy. Acute atrial overload. Left ventricular hypertrophy. Right ventricular hypertrophy (types: rSR, qR, S). Combined ventricular hypertrophy. Acute ventricular overload	7	Oral survey Test tasks Clinical objectives
2	Functional ECG stress tests. Bicycle ergometer test. Methodology for conducting an ECG stress test. Methodology for assessing stress testing.	8	Oral survey Test tasks Clinical objectives
4	Ultrasound echocardiographic examination	7	Oral survey Test tasks Clinical objectives
5	Transesophageal pacing Evaluation of the automatic control system function. Determination of SA conduction time. AV conduction study.	7	Oral survey Test tasks Clinical objectives
6	Coronary angiography	8	Oral survey Test tasks Clinical objectives
Total for the semester		44	

V. ASSESSMENT MATERIALS FOR CURRENT CONTROL AND INTER-MEDIATE CERTIFICATION

(are an appendix to the work program).

VI. EDUCATIONAL AND METHODOLOGICAL SUPPORT OF DISCIPLINE

6.1. Printed publications

1. Arkhipov M.V. Temporary transesophageal and endocardial electrical stimulation of the heart. // method. recommendations / M. V. Arkhipov, S. V. Molodykh; Federal State Budgetary Educational Institution of Higher Education USMU of the Ministry of Health of Russia. - Ekaterinburg. - USMU Publishing House, 2017. - 88 p.
2. Beresten N.F. Functional diagnostics: national manual / ed. N.F. Beresten, V.A. Sandrikova, S.I. Fedorov. – M.: GEOTAR-Media, 2019. – 784 p.
3. Orlov V.N. Guide to electrocardiography / V.N. Orlov. – M.: MIA, 2017. – 580 p.

4. Rogoza A.N. 24-hour blood pressure monitoring. A manual for doctors. St. Petersburg, 2010. – 46 p.

5. Rogoza A.N., Agaltsov M.V., Sergeeva M.V. 24-hour blood pressure monitoring: options for medical opinions and comments. Nizhny Novgorod: DEKOM, 2005. – 64 p.

6.2. Internet resources

	ELECTRONIC EDUCATIONAL RESOURCES	Access to the resource
	Digital library RostSMU. – URL: http://109.195.230.156:9080/opacg/	Access is not limited
	Student Advisor [Kits: "Medicine. Healthcare. IN"; "Medicine. Healthcare. SPO"; "Psychological Sciences"]: Electronic library system. – Moscow: Politekhresurs LLC. - URL: https://www.studentlibrary.ru + opportunities for inclusive education	Access is not limited
	Doctor's consultant. Electronic medical library: Electronic library system. – Moscow: LLC "Higher School of Organization and Management of Healthcare_Comprehensive Medical Consulting". - URL: http://www.rosmedlib.ru + opportunities for inclusive education	Access is not limited
	Scientific electronic library eLIBRARY. - URL: http://elibrary.ru	Open access
	National Electronic Library. - URL: http://neb.rf/	Access from library computers
	Scopus/ Elsevier Inc., Reed Elsevier. – Philadelphia: Elsevier BV, PA. – URL: http://www.scopus.com /via IP addresses of RostSMU and remotely after registration (<i>National project</i>)	Access limited
	Web of Science/ Clarivate Analytics. - URL: http://www.webofscience.com /via IP addresses of RostSMU and remotely after registration (<i>National Project</i>)	Access limited
	Freedom Collection [journals]/ScienceDirect. Elsevier. – URL: www.sciencedirect.com via IP addresses of RostSMU and remotely after registration (<i>National project</i>)	Access limited
	Springer Nature database. - URL: https://link.springer.com /via IP addresses of RostSMU and remotely after registration, remotely via RFBR CIAS https://kias.rfbr.ru/reg/index.php	Access is not limited
	Wiley Online Library /John Wiley & Sons. - URL: http://onlinelibrary.wiley.com via IP addresses of RostSMU and remotely after registration (<i>National project</i>)	Access limited
	Questel database Orbit Premium edition: patent search database http://www.orbit.com/ by IP addresses of RostSMU (<i>National project</i>)	Access limited
	Nano Database: reference publications on nanomaterials. - URL: https://nano.nature.com via IP addresses of RostSMU and remotely after registration	Access limited
	Russian education. Single window of access /Federal portal. - URL: http://www.edu.ru/ . – New educational environment.	Open access
	Electronic Library of the Russian Foundation for Basic Research (RFBR). - URL: http://www.rfbr.ru/rffi/ru/library	Open access
	Federal Electronic Medical Library of the Russian Ministry of Health.	Open

	- URL: http://femb.rucml.ru/femb/	access
	Archive of scientific journals/NEICON. - URL: https://arch.neicon.ru/xmlui/(Yandex search engine)	Open access
	CyberLeninka: scientific electron. beep. - URL: http://cyberleninka.ru/	Open access
	BEARWEST. Russian doctor portal: library, knowledge base.- URL: https://medvestnik.ru	Open access
	Medical Bulletin of the South of Russia. - URL: http://www.medicalherald.ru/jour or from the RostSMU website (Yandex search engine)	Open access
	Journal of Urology ("Urology Herald"): magazine of RostSMU. – URL: http://www.urovest.ru/jour or from the RostSMU website (Yandex search engine)	Open access
	South Russian Journal of Therapeutic Practice. – URL: http://www.therapeutic-j.ru/jour/index	Open access
	National Library of Medicine (PubMed). - URL: http://pubmed.ncbi.nlm.nih.gov/	Open access
	Directory of Open Access Journals: full-text journals from 121 countries, incl. in medicine, biology, chemistry. -URL: http://www.doaj.org/	Open access
	Free Medical Journals. -URL: http://freemedicaljournals.com	Open access
	Free Medical Books. -URL: http://www.freebooks4doctors.com	Open access
	International Scientific Publications. –URL: http://www.scientific-publications.net/ru/	Open access
	Univadis.ru: international honey. portal. - URL: http://www.univadis.ru/	Open access
	ECO-Vector Journals Portal/Open Journal Systems. - URL: http://journals.eco-vector.com/	Open access
	Evrika.ru information and educational portal for doctors. – URL: http://www.evrika.ru/	Open access
	Med-Edu.ru: medical video portal. - URL: http://www.med-edu.ru/	Open access
	DoctorSPB.ru: information-reference portal about medicine. - URL: http://doctorspb.ru/	Open access
	Rubricator of clinical recommendations Ministry of Health of Russia. - URL: http://cr.rosminzdrav.ru/	Open access
	Dictionaries and encyclopedias on Academician. - URL: http://dic.academic.ru/	Open access
	Official Internet portal of legal information. - URL: http://pravo.gov.ru/	Open access
	Education on Russian: portal / State. Institute of Russian language them. A.S. Pushkin. -URL: http://pushkininstitute.ru/	Open access
	History.RF. [The main historical portal of the country] - URL: https://histrf.ru/	Open access
	ENVOC.RU English vocabulary: educational site for English learners. language -URL: http://envoc.ru	Open access
	World Health Organization. - URL: http://who.int/ru/	Open access
	Ministry of Scienceand higher education Russian Federation. - URL: http://minobrnauki.gov.ru/	Open access

	Modern problems of science and education: electron. magazine. - URL: http://www.science-education.ru/ru/issue/index	Open access
	Other Open resources can be found at: http://rostgmu.ru →Library→Electronic catalogue→Open Internet resources→further by keyword...	

6.3. Guidelines for students on mastering the discipline

Planning and organizing the time needed to study the discipline. An important condition for successfully mastering the discipline of Immunology 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. In the evening you should always distribute work for tomorrow. At the end of each day, it is advisable to summarize the work: carefully check whether everything was completed according to the plan, whether there were any deviations, and if there were, for what reason they occurred. 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 better to divide the lecture notes into points, observing the red line. This will be greatly facilitated by the lecture plan questions proposed to the teachers. You should pay attention to the emphasis and conclusions that the lecturer makes, marking the most important points in the lecture material with the remarks “important”, “well remember”, etc. You can also do this using colorful markers or pens, emphasizing terms and definitions.

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. It is this kind of serious, painstaking work with the lecture material that will allow you to deeply master the theoretical material.

Preparation for practical classes. The student must begin preparing for each practical lesson by familiarizing himself with the practical 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.

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.

Work with sources should begin with introductory reading, i.e. view the text, highlighting its structural units. During introductory reading, bookmarks mark those pages that require more careful study.

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 also necessary to analyze which of the author's statements are problematic, hypothetical in nature and to grasp hidden issues.

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. You can make notes on separate sheets of paper, which can then be easily organized into individual topics of the course being studied. Another way is to keep thematic notebooks on one topic. 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 (author, title, imprint, page number) must certainly be given. 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 periphrases, synonymous means, words that describe general concepts, explanations, examples, interpretations, "word creation" when speaking and writing;
 - repeat or paraphrase the interlocutor's remarks to confirm understanding of 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

<p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (1st floor, room 187)</p> <p>Classroom for conducting lecture-type classes</p>	<p>The room is equipped with specialized educational furniture: chairs, tables. Technical teaching aids used to provide educational information to a large audience: laptop, multimedia projector.</p>
<p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (1st floor, room 49, 157)</p> <p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (2nd floor, room 36)</p> <p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (5th floor)</p> <p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (6th floor, room 61)</p> <p>344090, Rostov region, Rostov-on-Don, st.</p>	<p>The premises are equipped with educational furniture: chairs, tables, teaching boards, a computer, a set of clinical situational tasks for each topic of classes, a set of test tasks for each topic of classes, a set of radiographs, a set of electrocardiograms, a stethoscope, a device for measuring blood pressure.</p>

<p>Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (8th floor, room 27)</p> <p>344090, Rostov region, Rostov-on-Don, st. Blagodatnaya, 170. State Budgetary Institution RO "Rostov Regional Clinical Hospital" (ground floor, room 56)</p> <p>Classrooms for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification</p>	
<p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214. Department and Clinic of Neurosurgery, Clinic of Therapy (Liter A, 2nd floor, room 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)</p> <p>Classrooms for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification</p>	<p>The room is equipped with specialized educational furniture: tables, chairs. Educational videos, sets of materials on topics (ECG, x-rays, laboratory tests, ultrasound data, etc.), a set of presentations for a multimedia projector for practical work. classes and lectures. Simulation technologies: role-playing games</p>
<p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214. Department and Clinic of Neurosurgery, Clinic of Therapy (Liter A, 2nd floor)</p> <p>Classroom for conducting lecture-type classes</p>	<p>The room is equipped with specialized educational furniture.</p>
<p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevan, 38/57-59/212-214. Educational and laboratory building(2nd floor, 4th floor)</p> <p>344022, Rostov region, Rostov-on-Don, lane. Nakhichevansky, 38. Medical and diagnostic building (Liter: B-A, 6th floor)</p> <p>Premises for independent work of students - library, auditorium of the physics department, department of automation and monitoring of teaching quality</p>	<p>Computer equipment with opportunity connecting to the Internet and providing access to the EIOS RostSMU</p>