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**Federal State Autonomous Educational Institution of Higher Education
"Peoples' Friendship University of Russia"**

Medical Institute

(name of the main educational unit (PMO) - the developer of the postgraduate program)

**Department of Internal Diseases with a course of cardiology and functional
diagnostics named after academician V.S. Moiseev**

(name of the basic educational unit (BUE) - the developer of the postgraduate program)

WORKING PROGRAM OF THE DISCIPLINE

Research Methodology

(name of discipline/module)

Scientific specialty:

3.1.18. Internal diseases

(code and name of scientific specialty)

**The development of the discipline is carried out as part of the implementation of the
postgraduate program:**

Internal diseases : Heart failure

(name of postgraduate program)

1. THE PURPOSE OF MASTERING THE DISCIPLINE

The purpose of mastering the discipline "Methodology of scientific research" is the training of a specialist who has fundamental theoretical knowledge and practical skills necessary for conducting scientific work, who is able to successfully and timely complete a dissertation research for the degree of candidate of medical sciences.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

As a result of mastering the discipline "Methodology of scientific research" should

have

- methodological knowledge and research skills aimed at solving the problems of research, scientific and pedagogical, educational and methodological, expert and analytical, organizational and managerial, practical and innovative activities

- propensity for constant self-education

know:

- methods of analysis and evaluation of modern scientific achievements;
- research methods;
- features of presenting the results of scientific activity in writing when working in Russian and international teams;
- principles of analysis and generalization of research results, modern methods of statistical processing of research results, methods of public presentation of scientific data;
- modern methods of collecting and processing information in the field of cardiology and related fields, corresponding to the tasks set for research, forms of public presentation of scientific data.

be able to:

- carry out research work in the field of clinical medicine (cardiology), which is important for healthcare practice;
- determine the object and subject of research
- formulate goals, objectives and hypotheses
- describe materials and research methods
- describe results
- collect data
- work with original
- analyze the received information
- analyze alternative options for solving research and clinical problems;
- analyze and summarize the results of scientific research, present them in the form of scientific publications and reports;
- to systematize and summarize the experience of scientific research in the field of biology and medicine.
- in practice to use knowledge in the field of modern information technologies and skills for solving problems of research, scientific and pedagogical, educational and methodical, expert and analytical, organizational and managerial, practical and innovative activities

own:

- have the ability for independent research activities at the level of designing a dissertation research, readiness to generate and use new scientific ideas
- hypothesis testing methods
- skills of building generalizations and conclusions
- dissertation research solving skills
- skills of critical analysis and evaluation of modern scientific achievements;
- skills and technologies for planning professional activities in the field of scientific research;
- skills of independent conducting applied scientific research in the field of medicine based on the principles of rational clinical practice;
- the skills of introducing the results of modern scientific research into clinical medicine, the organization and interaction of the scientific school and practical healthcare;
- methods of planning, organizing and conducting scientific research, allowing to obtain new scientific facts that are significant for the medical industry;
- skills of analysis, generalization and presentation of the results of scientific research, public presentation of the results of the research.

3. VOLUME OF DISCIPLINE AND TYPES OF EDUCATIONAL WORK

The total labor intensity of the discipline "Methodology of scientific research" is 2 credits (72 hours).

Table 4.1. Types of educational work by periods of mastering the postgraduate program

Type of study work		TOTAL, ac.h.	Well		
			1	2	3
<i>Contact work, acc.</i>		18	18		
including:					
Lectures (LC)		12	12		
Laboratory work (LR)					
Practical/seminar sessions (SZ)		6	6		
<i>Independent work of students, acc.</i>		18	18		
<i>Control (exam), acc.</i>		36	36		
The total complexity of the discipline	ac.h.	72	72		
	credit	2	2		

5. CONTENT OF THE DISCIPLINE

Table 5.1. The content of the discipline (module) by type of educational work

Name of the discipline section	Contents of the section (topic)	Type of study work
Section 1. Methodological foundations of scientific knowledge	Topic 1.1. Science as a specific form of activity. The concept of scientific knowledge. Absolute and relative knowledge. Levels, forms and methods of scientific knowledge.	OK
	Topic 1.2. Method of scientific knowledge: essence, content, main characteristics. The concept of the method and methodology of science. General methodological	OK

Name of the discipline section	Contents of the section (topic)	Type of study work
	principles of scientific research: unity of theory and practice; principles of objectivity, comprehensiveness and complexity of the study; systematic approach to research.	
Section 2. Ethical aspects of scientific research	Topic 2.1. The concept of scientific research. Types of research. Classification of scientific research. Biomedical Research. Ethical aspects of scientific research	OK
Section 3. Methodology of dissertation research.	Topic 3.1. The structure of scientific dissertation research. Research dissertation program. Choice of topic, work plan, bibliographic search, selection of literature and factual material. Dissertation architecture. Distribution and structure of the material. The problem of dissertation research. Disclosure of problems, interpretation of data, synthesis of the main results. Rules and scientific ethics of citation. The practical significance of the dissertation and the relevance of its topic.	LK, SZ
	Topic 3.2. Stages of dissertation research.	LK, SZ
Section 4 Good Scientific Practice	Topic 4.1. Basic principles of good scientific practice.	NW
Section 5 Processing and analysis of scientific research results	Topic 5.1. Fundamentals of the theory of random errors and mathematical statistics: the concept of a random variable, the distribution function of random variables, the probability density, the totality of random variables, the laws of distribution of random variables. Checking experiments for equal accuracy. Experiment planning. Graphical representation of the results of the experiment. Empirical formulas	NW, SR
Section 6. Registration of scientific research.	Topic 6.1. Presentation of research results.	NW, SR
	Topic 6.2. Principles of writing scientific articles, reports.	NW, SR

6. LOGISTICS AND TECHNICAL SUPPORT OF THE DISCIPLINE

Table 6.1. Logistics of discipline

Audience type	Audience equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	An auditorium for lecture-type classes, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations. Lecture hall of the therapeutic building of the State Budgetary Institution of Health "GKB im. V.V. Vinogradov DZM, Moscow, st. Vavilova, d. 61	A set of specialized furniture; technical means: a multimedia projector, a laptop, a plasma panel, a screen, a magnetic board, a set of dummies, a set of educational videos and presentations, a set of analog and digital radiographs, educational posters and tables. Software: Microsoft products (OS, office suite, including MS Office / Office 365, Teams, Skype

Audience type	Audience equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	An auditorium for lecture-type classes, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations. Lecture halls No. 1 and 2 of the therapeutic and administrative building of the State Budgetary Institution of Health "GKB im. A.K. Eramishantseva DZM", Moscow, st. Lenskaya, 15	A set of specialized furniture; technical means: a multimedia projector, a laptop, a plasma panel, a screen, a magnetic board, a set of dummies, a set of educational videos and presentations, a set of analog and digital radiographs, educational posters and tables. Software: Microsoft products (OS, office suite, including MS Office / Office 365, Teams, Skype
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and technical means for multimedia presentations. Room No. 543 of the therapeutic building of the State Budgetary Institution of Health "GKB them. V.V. Vinogradov DZM, Moscow, st. Vavilova, d. 61	A set of specialized furniture; technical means: a multimedia projector, a laptop, a set of educational videos and presentations, a set of radiographs, an ECG, educational posters and tables. Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams.
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and technical means for multimedia presentations. Lecture hall No. 2 of the administrative building of the GBUZ "GKB im. A.K. Eramishantseva DZM", Moscow, st. Lenskaya, 15	A set of specialized furniture; technical means: a multimedia projector, a laptop, a set of educational videos and presentations, a set of radiographs, an ECG, educational posters and tables. Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams.
For independent work of students	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the EIOS.	A set of specialized furniture; technical means: multimedia projector, laptop. Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams.

* - the audience for independent work of students is required!

7. EDUCATIONAL-METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE

Main literature:

1. Volkov, Yu.G. How to write a diploma, term paper, essay [Text] / Yu.G. Volkov. 2nd ed. - Rostov n / a: Phoenix, 2003.
2. Anufriev, A.F. Scientific research. Coursework, diploma and dissertation works [Text] / Mosk. state open ped. un-t. - M.: B. i., 2002.
3. Kuznetsov, I.N. Abstracts, term papers and theses: Methods of preparation and design [Text]: Textbook - method. allowance. - M.: Dashkov i K, 2002.
4. Coursework and theses: from topic selection to defense [Text]: Ref. Allowance / Auth - comp. I.N. Kuznetsov. - Minsk: Misanta, 2003.
5. Pavlova E.P. From essay to coursework, from diploma to dissertation: a practical guide to preparation, presentation and defense: a scientific guide. - M.: - "Book service", - 2003. - 156 p.
6. Rogozhin, M. How to write a term paper and a thesis [Text] / M. Rogozhin. - St. Petersburg: Peter, 2005.
7. Zagvyazinsky VI, Atakhanov R. Methodology and methods of psychological and pedagogical research. - M., Academy, 2007, - 208s.
8. Kuzmina N.V. Methods of Systemic Pedagogical Research: Textbook. M.: Public education, 2002.
9. Lukash S.N., Epoeva K.V. Independent and scientific - research work of students of higher educational institutions: textbook. methodical allowance for university teachers. - Armavir: RIC AGPA, 2011. - 52p.
10. Obraztsov, P.I. Methods and methodology of psychological and pedagogical research. - St. Petersburg: Peter, 2004. - 268 p.
11. D. Zipes, P. Libby et all. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 2-Volume Set, 11th Edition. Elsevier, 2018. - 2128.
12. Hurst's The Heart, 14th Edition. V. Fuster, R. A. Harrington, J. Narula, Z. J. Eapen. McGraw-Hill Education, 2017. - 2208
13. Heart Failure: A Companion to Braunwald's Heart Disease, 3rd Edition. D. Mann, G. M. Felker. Saunders, 2015. - 784
14. Harrison's Principles of Internal Medicine, 20th Edition. D. Kasper, AS Fauci, SL Hauser, DL Longo, JL Jameson, J. Loscalzo. McGraw-Hill Education/Medical, 2018.
15. Davidson's Principles and Practice of Medicine, 23rd Edition. S. H. Ralston, ID Penman, M. W. J. Strachan. Elsevier, 2018. - 1440
16. Feigenbaum's Echocardiography. 8th edition. WF Armstrong, T. Ryan. Wolters Kluwer. 2018. - 2841.
17. Evidence Based Medicine - 5th Edition. S. Straus, P. Glasziou, S. Richardson, B. Haynes. Elsevier, 2018. - 336.

Additional literature:

1. The ESC Textbook of Cardiovascular Medicine. TF Lüscher, JA Camm, G. Maurer, P. Serruys. Oxford University Press, 2018.
2. Oxford Textbook of Advanced Heart Failure and Cardiac Transplantation - Oxford Medicine. MJ Domanski, MR Mehra, MA Pfeffer. Oxford University Press, 2016. - 442.
3. The ESC Textbook of Intensive and Acute Cardiovascular Care. M. Tubaro, P. Vranckx, S. Price, C. Vrints. Oxford University Press, 2015. - 799.

4. The EHRA book of Pacemaker, ICD, and CRT Troubleshooting. H. Burri, C. Israel, J.-C. Deharo. Oxford, 2015. - 310.
5. The EACVI Textbook of Cardiovascular Imaging. JL Zamorano et al. Oxford University Press, 2015. - 678.
6. The ESC Handbook on Cardiovascular Pharmacology. JC Kaski, KP Kjeldsen. Oxford University Press, 2019. -960.
7. How to Read a Paper: The Basics of Evidence-based Medicine and Healthcare, 6th Edition | Trisha Greenhalgh. T. Greenhalgh. Blackwell Bmj Books, 2006. - 229. 2. Barskov A.G., Scientific method: possibilities and illusions. [Text] - M.: 1994.
8. Berezhnova E.V. Requirements for course and diploma papers. [Text] - M.: Ped. Island of Russia, 1999.
9. Borikova L.V., Vinogradova N.A. We write an essay, report, final qualifying work [Text]: Textbook for students - M.: Academy, 2000.
10. Erofeeva T.N. Seminars and practical classes on the course "Methodology and methodology of pedagogical research" [Text]: A manual for students of the faculties of preschool education. - M., 1997.
11. Kuzin F.A., Candidate's thesis. Writing methodology, design rules and defense procedure [Text]: A practical guide for graduate students and applicants for a scientific degree. - M.: 1999.
12. Novikov A.M. How to work with a dissertation [Text]: A guide for a novice teacher-researcher. - 2nd ed., revised. And extra. - M.: IPKiPRNO MO, 1996.
13. Radaev V.V. How to organize and present a research project: 75 simple rules [Text] - M.: GU VSHZH: INFRA - M, 2001.
14. Usmanov, V.V. Preparation and implementation of graduation design [Text]: Method. allowance / Ed. V.V. Usmanov. - Penza, 2000. *Resources*

information and telecommunication network "Internet":

1. RUDN ELS and third-party ELS, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System - RUDN EBS <http://lib.rudn.ru/MegaPro/Web>
- ELS "University Library Online" <http://www.biblioclub.ru>
- EBS Yurayt <http://www.biblio-online.ru>
- ELS "Student Consultant" www.studentlibrary.ru
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Trinity Bridge"

2. Databases and search engines:

- electronic fund of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

3. Special information resources:

- Microsoft office.

- Statistical programs Statistica, SPSS, Stata/
- Scientific and educational portal: <http://www.eup.ru>
- Administrative and management portal: <http://www.aup.ru>
- Educational portal: <http://www.informika.ru>
- Portal of the All-Russian Scientific Society of Cardiology and the Association of Pediatric Cardiologists of Russia. <https://scardio.ru>
- Portal of the European Association of Cardiology. <http://www.escardio.org/>
- American Heart Association website. <http://www.heart.org/HEARTORG/>
- RUDN Electronic Library System; <http://lib.rudn.ru/4>
- RUDN educational portal (<http://web-local.rudn.ru>);
- Scientific electronic library (<http://elibrary.ru/defaultx.asp>);
- Universal library ONLINE (<http://biblioclub.ru>);
- BENTHAM OPEN Electronic Journal Library (<http://www.benthamscience.com/open/az.htm>);
- Elsevier Electronic Journal Library (<http://www.elsevier.com/about/open-access/open-archives>)
- Medical online library MedLib (<http://med-lib.ru/>);
- Recommendations of the Russian Society of Cardiology www.scardio.ru
- US National Library of Medicine National Institutes of Health: <http://www.ncbi.nlm.nih.gov/pubmed/>
- Scientific electronic library: <http://library.ru/defaultx.asp>

Educational and methodological materials for independent work of students in the development of the discipline/module:*

1. A course of lectures on the discipline "Methodology of scientific research".
2. Guidelines for the implementation of practical tasks in the discipline "Methodology of scientific research."
3. Guidelines for independent work on the discipline "Methodology of scientific research".

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of the discipline in TUIS!

8. EVALUATION MATERIALS AND SCORE-RATING SYSTEM FOR ASSESSING THE LEVEL OF FORMATION OF COMPETENCES IN THE DISCIPLINE

Evaluation materials and a point-rating system for assessing the development of the discipline are presented in the Appendix to this Work Program of the discipline.

* - OM and BRS are formed on the basis of the requirements of the relevant local normative act of the Peoples' Friendship University of Russia.

DEVELOPERS:

**Head cafe Internal Medicine with a Course in
Cardiology and Functional Diagnostics named after
Academician V.S. Moiseeva, Doctor of Medical
Sciences, Professor, Corresponding Member of RAS**

Position, BUP


Signature

Kobalava Zh.D.

Surname I.O.

**Associate Professor, Department of Internal
Medicine with a course of cardiology and functional
diagnostics named after Academician V.S.
Moiseeva, Ph.D.**

Position, BUP


Signature

Kotova E.O.

Surname I.O.

HEAD OF BUP:

**Head cafe Internal Medicine with a Course in
Cardiology and Functional Diagnostics named
after Academician V.S. Moiseeva, Doctor of
Medical Sciences, Professor, Corresponding
Member of RAS**

Name of BUP


Signature

Kobalava Zh.D.

Surname I.O.