



MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN
FEDERATION THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution
of Higher Education
"Far Eastern Federal University"
(FEFU)

SCHOOL OF BIOMEDICINE

" AGREED BY"

«General medicine» educational program
Supervising person

Yu.S. Khotimchenko



" APPROVED BY"

Clinical Medicine
Department Director

B.I. Geltser

« 14 » of January 2021

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WORKING PROGRAM OF ACADEMIC DISCIPLINE (WPAD)

Methodology of scientific research in medicine

Specialty 31.05.01 General Medicine

Form of preparation: full-time

year 6, semesters B, C
lectures 18 hours.
practical classes 36 hours.
laboratory works are not provided
total amount of in-class lessons 144 hours
including using ALM 18 hours
independent self-preparation 90 hours
including preparation to exam is not provided
test-papers (quantity) are not provided
course paper / course project not provided
pass-fail exam B, C semester
exam is not provided.

The working program was drawn up in accordance with the requirements of the federal state educational standard of higher education 31.05.01 in the direction of training "General Medicine" (level of training specialist), approved by order of the Ministry of Science and Higher Education of the Russian Federation dated August 12, 2020 No. 988 and the Educational Plan in the direction of training "General Medicine".

The working program of the discipline was discussed at the meeting of the Department of the clinical medicine. Protocol No.5, January 14, 2021

Director of the Department: Doctor of Medical Sciences, Professor T. A. Brodskaya

Prepared by: PhD in Medicine, Associate Professor V. N. Rasskazova, Assistant E. V. Maslyancev

Vladivostok
2021

Reverse side of the RAD title page

I. The working program was reviewed at the meeting of the Department:

Protocol from " _____ " _____ 20__ city no. _____ _

Department Director _____
(signature) (Full Name)

II. The working program was reviewed at the meeting of the Department:

Protocol from " _____ " _____ 20__ city no. _____ _

Department Director _____
(signature) (Full Name)

III. The working program was reviewed at the meeting of the Department:

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Department Director _____
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IV. The working program was reviewed at the meeting of the Department:

Protocol from " _____ " _____ 20__ city no. _____ _

Department Director _____
(signature) (Full Name)

Goals and objectives of mastering the discipline:

Objective: to form students' system of basic knowledge, basic practical skills and abilities necessary for carrying out research activities in the field of public health protection.

Tasks:

- Formation of knowledge about the essence of research activities and the specifics of their implementation in medicine and public health.
- Formation of knowledge about modern technologies, methods and methods of organization (design) of scientific research in medicine and healthcare.
- Formation of knowledge about the types of scientific literature, the principles of searching for scientific information, the main types of library catalogues and electronic databases of scientific literature (including foreign ones), training students in methods of searching and analyzing scientific literature using the resources of specialized (university) libraries, local electronic databases, the Internet and official statistical reviews.
- Formation of knowledge about the bibliographic description of scientific sources, including electronic ones, formation of skills in compiling bibliographic descriptions of various types of scientific literature.
- Formation of knowledge about the types of abstracts, their structure, features of the abstract-review, methods of compression of the source text, stable turns used in abstracting, fixing the algorithm of actions when compiling a monographic and review abstract.
- Formation of knowledge about the features of a scientific text on the example of a scientific article, formal requirements for the design of a scientific text, about the main ways of presenting numerical information (tables, diagrams), the principles of optimal choice of one of the methods.

As a result of studying this discipline, students develop the following professional competencies:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competence achievement indicator
medical	PC-16-Capable and ready to perform analysis of morbidity, disability and mortality indicators to characterize the health of adults and adolescents	PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies
		PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field
	PC-17-Is ready to participate in the assessment of the quality of medical care using basic medical and statistical indicators	PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research

Code and name of the competence achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies	Knows medical and statistical indicators of morbidity, disability and mortality, the procedure for issuing documents certifying temporary and permanent disability, as well as methods for evaluating scientific sources of information; algorithm for compiling a monographic and review abstract features of a scientific text and requirements for its design; ways of presenting numerical information.
	Able to analyze medical and statistical performance indicators of a medical organization that characterize the health of the attached population using educational, scientific, popular science literature, the Internet for professional activities

Code and name of the competence achievement indicator	Name of the assessment indicator (the result of training in the discipline)
	Possession the methodology for calculating and evaluating quantitative and qualitative medical and statistical indicators of work on morbidity, disability and mortality of medical organizations and their structural divisions; present the results of analysis of medical and statistical indicators of morbidity, disability and mortality of patients, as well as methods for analyzing the results of their own activities to prevent professional mistakes: knowledge of various functions of a manager: planning, organization control , regulation, monitoring and controlling, ability to consciously choose the optimal strategy, etc.
PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field	Knows the principles, methods and tools for analyzing statistical reporting, including forms of branch and federal statistical observation
	It can solve standard tasks when analyzing data from official statistical reports, including federal and industry sources of statistical observation.
	Has skills in preparing reports and publications on the analysis of official statistical reporting data
PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research	; Knows how to maintain standard accounting and reporting medical documentation in medical organizations on morbidity, disability and mortality indicators when assessing the health of the attached population, as well as the essence of evidence-based medicine; types of scientific sources of information; methods of evaluation of scientific sources of information; algorithm for compiling a monographic and review abstract; features of a scientific text and requirements for its design
	Can analyze and evaluate the quality of medical care, use medical information systems to assess the health of the attached population; analyze and evaluate information from scientific sources; compile a monographic and review abstract on the research topic; analyze ways to present numerical data in terms of speed of perception, data volume, and logic; create a presentation to the report on the results of the study
	Has the skills of analyzing and preparing reports, compiling reports on medical and statistical indicators of morbidity, disability and mortality to assess the health of the attached population; skills in designing a scientific text; - skills in determining the type of numerical data; skills in choosing the optimal way to present numerical data using different types of tables and diagrams

2. Labor intensity of the discipline and types of training sessions in the discipline

The total labor intensity of the discipline is 4 credits (144 academic hours).
(1 credit unit corresponds to 36 academic hours)

Types of training sessions and work of the student in the discipline are::

Designation	Types of training sessions and work of the student
Lek	Lectures
Pr	Practical exercises
Online	Online course
SP	Independent work of the student during the theoretical training period
Control	Independent work of the student and contact work of the student with the teacher during the intermediate certification period

Structure of the discipline:

The form of training is full – time.

№	Section name Disciplines	Term	Number of hours by type of training sessions and work of the student						Forms of intermediate attestation, ongoing monitoring of academic performance
			Lek	Lab	Pr	OK	WED	Control	
1	Module 1. Working with sources of scientific information	11	4		8	18	90		OQ-1, OQ-3, WW-1, WW-4
2	Module II. Scientific text	11	4	8					
3	Module III. Organization of medical scientific research	11	4	12					
4	Module IV. Design of scientific medical research	11, 12	6	8					
Total:			18	-	36	18	90	-	

I. STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE

Lecture sessions (18 hours.)

11th semester (18 hours)

MODULE 1. Working with scientific information sources (4 hours)

Topic 1. Search for scientific information. Bibliographic description according to GOST 7.1. -2003 (4 hours)

Types of scientific sources, ways to evaluate them according to various criteria (scientific/non-scientific, authority, volume of information, its novelty, etc.). A system of information search methods (continuous, selective, intuitive, typological, inductive, deductive methods, etc., their advantages and disadvantages).

General search algorithm: a) analysis of the topic and selection of keywords, including using reference literature, b) determination of the required number, type and age of sources, c) actual search using various methods and resources, d) checking the results (compliance with the topic, age, availability, scientific content, authority, etc.) and their analysis (grouping sources by microtemes, expanding the list of keywords, reformulating, expanding, narrowing the topic, etc.). Types of library catalogs (card and electronic, alphabetical, systematic, subject). UDC and BBK codes.

Definition, main elements, and prescribed punctuation. Virtual bibliographic reference rooms. Typical errors in the bibliographic description. Direct citation and paraphrase. Citation ethics and the concept of plagiarism. Convenient bibliography storage system.

MODULE 2. Scientific text (4 hours)

Topic 2. Referencing (2 hours)

The concept of abstract and annotation, differences and similarities. An indicative and informative abstract. Monographic and review abstract. Algorithm of actions when summarizing (rapid reading, careful reading, semantic analysis, highlighting important and secondary things, formulating key points and compressing them, using cliches). Methods for compressing the source text (sifting out the irrelevant, paraphrasing). Stable book turnover (cliche)

Topic 3. Requirements for a scientific text and its design(2 hours)

Scientific and scientific character. Signs of scientific style (objectivity, logic, accuracy) and their manifestations in speech. The author's " we " in a scientific text. Use of terms. Abbreviations. Types of scientific articles. Article structure: relevance, purpose, material and methods, results and discussion, conclusions. Structural relationships of text components (goals and objectives, methods and results, etc.). Requirements for formulas.

MODULE 3. Organization of medical scientific research(4hours)

Topic 4Scientific activity and its organization in Russia (2 hours)

The concept of science and research activities. Tasks of scientific activity. The concept of research relevance. Object and subject of research. Topic, purpose, and objectives of the study. Scientific novelty of research and its levels. Scientific directions and specialties. Academic degrees and academic titles. Forms of training of scientific personnel. The system of scientific organizations. Financing of scientific research. Types of scientific research (fundamental, applied, search). Practical significance of scientific medical research and forms of its manifestation. Forms of implementation of scientific research results in healthcare practice

Topic 5.Ethical aspects and regulatory framework of research activities in medicine and healthcare(2 hours)

Ethical aspects of scientific research in medicine and healthcare. World Medical Association. The main documents of international law regulating scientific medical research. Normative legal documents of the Russian Federation regulating research activities in medicine and healthcare, their main provisions. Rights and

obligations of research participants. The Ethics Committee and its role.

Topic 6. Fundamentals of medical statistics. Stages of medical scientific research (2 hours)

The concept of statistics as a science. Medical statistics: concept, tasks, and sections. Statistical methods as the basis of research activities in medicine and public health, features of their use. Basic concepts of medical statistics (statistical totality, unit of observation, study volume, considered features, accounting document). Types of attributes considered: similarities and differences, factorial and effective, quantitative (discrete, continuous) and qualitative (alternative, nominative, ordinal). Transformation of quantitative attributes: goals, methods. General and sample populations.

Stages of scientific research in medicine and healthcare and their content. Preparatory (organizational) stage as the basis for all subsequent work. Methodological and procedural sections of training. Research program and plan. Methods of collecting material (observation, documentary, survey) and their varieties. Material development (checking documentation, grouping and summarizing data, encoding data). Creating the x database.x.

MODULE 4. Design of scientific medical research (6 hours).

Topic 7. Observational epidemiological studies (2 hours)

General idea of epidemiology as a science: concept, tasks. Cross-sectional observational studies: construction, opportunities. Longitudinal observational studies. Cohort study: tasks, construction, strengths and weaknesses. Matrix (four-field table) for analyzing the results of a cohort study. Indicators calculated based on the results of a cohort study (incidence, attributive risk, relative risk, etiological proportion, odds ratio): methodology of their calculation and evaluation.

Topic 8. Diagnostic test studies (2 hours).

The concept of a diagnostic test. The concept of diagnostic test validity. Comparison with the "gold standard" as a basis for evaluating the validity of a diagnostic method. Indicators that characterize the validity of a diagnostic test (sensitivity, specificity, accuracy, predictive value of a positive result, predictive value of a negative result, likelihood ratio of a positive result, likelihood ratio of a negative result): methodology of their calculation and evaluation. The concept of reproducibility of a diagnostic test. The concept of variability of diagnostic test results. Objective and subjective variability.

Topic 9. Experimental studies (2 hours)

General characteristics of experimental research in medicine and public health. The main ways to increase the evidence of experimental research results. Unsupervised and controlled experiments. Positive and negative controls. Parallel and cross-control: characteristics, application conditions. "Blind" research: the concept, tasks of "blinding", types of "blinding", evidence-based results. Randomization: concept, tasks.

The concept of clinical and economic analysis, its possibilities and limitations. The nature and classification of costs associated with medical intervention. Types of effectiveness of medical activity (medical, social, economic), their essence and

content. Basic methods of clinical and economic analysis. The "cost minimization" method: the concept, its limited application in medical research. Cost-effectiveness method as a basis for clinical and economic research: calculation and comparison of correlation coefficients. Cost-benefit method: concept, general characteristics, application. Health-related quality of life: a concept, methodology for studying and evaluating it. Evaluation of the result of medical intervention by calculating the QALY indicator.

II. STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE

Practical exercises (36 hours)

11th semester (284 hours)

(Including using ALM-84 hours)

Topic 1. Search for scientific information (4 hours)

ALM – "Press Conference" (4 hours)

Types of scientific sources, ways to evaluate them according to various criteria (scientific/non-scientific, authority, volume of information, its novelty, etc.). A system of information search methods (continuous, selective, intuitive, typological, inductive, deductive methods, etc., their advantages and disadvantages). General search algorithm: a) analysis of the topic and selection of keywords, including using reference literature, b) determination of the required number, type and age of sources, c) actual search using various methods and resources, d) checking the results (compliance with the topic, age, availability, scientific content, authority, etc.) and their analysis (grouping sources by microtemes, expanding the list of keywords, reformulating, expanding, narrowing the topic, etc.). Types of library catalogs (card and electronic, alphabetical, systematic, subject). UDC and BBK codes. Types of electronic databases (local and remote access, including closed and open, bibliographic, abstract, full-text). IvGMA library resources (electronic catalog, "Student's Consultant", "Medart" and card catalogs). Internet resources (general principles of creating search queries, NEB eLibrary.ru, PubMed, Google Scholar search, the concept of the Cochrane library, etc.). Typical search errors. Definition, main elements, and prescribed punctuation. Virtual bibliographic reference rooms. Typical errors in the bibliographic description. Direct citation and paraphrase. Citation ethics and the concept of plagiarism. Convenient bibliography storage system.

Topic 2. Referencing (4 hours)

ALM – "Extended Conversation" - (4 hours)

The concept of abstract and annotation, differences and similarities. An indicative and informative abstract. Monographic and review abstract. Algorithm of actions when summarizing (rapid reading, careful reading, semantic analysis, highlighting important and secondary things, formulating key points and compressing them, using cliches). Methods for compressing the source text (sifting out the irrelevant, paraphrasing). Stable book turnover (cliches). Algorithm of actions when writing a review abstract, systematization of the material according to the principles of juxtaposition, chronology, gradation, complementarity, etc., using mind maps. Expressing your point of view when reviewing. Use references to the list of references. Formal requirements for writing authors' surnames, etc. Typical errors.

Topic 3. Requirements for a scientific text and its design. Numeric data representation (4 hours)

Scientific and scientific character. Signs of scientific style (objectivity, logic, accuracy) and their manifestations in speech. The author's "we" in a scientific text. Use of terms. Abbreviations. Types of scientific articles. Article structure: relevance, purpose, material and methods, results and discussion, conclusions. Structural relationships of text components (goals and objectives, methods and results, etc.). Requirements for formulas. Use of numbered and bulleted lists and their relevance. Graphic selections (bold and italics, acute, discharge, etc.). Use of quantitative and ordinal numerals, abbreviations. Typical errors.

Algorithm for selecting a tool (formulating the idea of comparison, determining the type of data and text type, choosing the type of table or chart). Types of comparison (positional, temporal, component-by-component, frequency, correlation). Analyze the result and edit charts and tables. Requirements for the design of tables and figures in the text.

Topic 4. Scientific activity and its organization in Russia (4 hours)

The concept of science and research activities. Tasks of scientific activity. The concept of research relevance. Object and subject of research. Topic, purpose, and objectives of the study. Scientific novelty of research and its levels. Scientific directions and specialties. Academic degrees and academic titles. Forms of training of scientific personnel. The system of scientific organizations. Financing of scientific research. Types of scientific research (fundamental, applied, search). Practical significance of scientific medical research and forms of its manifestation. Forms of implementation of scientific research results in healthcare practice.

Topic 5. Ethical aspects and regulatory framework of research activities in medicine and healthcare (4 hours)

Ethical aspects of scientific research in medicine and healthcare. World Medical Association. The main documents of international law regulating scientific

medical research. Normative legal documents of the Russian Federation regulating research activities in medicine and healthcare, their main provisions. Rights and obligations of research participants. The Ethics Committee and its role.

Topic 6. Fundamentals of medical statistics and stages of medical scientific research (4 hours)

ALM – "Extended Conversation" - (4 hours)

The concept of statistics as a science. Medical statistics: concept, tasks, and sections. Statistical methods as the basis of research activities in medicine and public health, features of their use. Basic concepts of medical statistics (statistical totality, unit of observation, study volume, considered features, accounting document). Types of attributes considered: similarities and differences, factorial and effective, quantitative (discrete, continuous) and qualitative (alternative, nominative, ordinal). Transformation of quantitative attributes: goals, methods. General and sample populations. The Law of Large numbers. The concept of sample representativeness. Quantitative and qualitative representativeness. The concept of random error and systematic error (bias), their comparative characteristics. The main reasons for the appearance of biases in medical scientific research. Methods of sampling and technology of their implementation.

Stages of scientific research in medicine and healthcare and their content. Preparatory (organizational) stage as the basis for all subsequent work. Methodological and procedural sections of training. Research program and plan. Methods of collecting material (observation, documentary, survey) and their varieties. Material development (checking documentation, grouping and summarizing data, encoding data). Creating a database. Data analysis and its main methods. The concept of research design. Types of research by task, time, and scope, and their general characteristics. Evidence of the results obtained in studies of various types.

Topic 7. Observational epidemiological studies (4hours)

ALM – "Press Conference" (6 hours)

General idea of epidemiology as a science: concept, tasks. Cross-sectional observational studies: construction, opportunities. Longitudinal observational studies. Cohort study: tasks, construction, strengths and weaknesses. Matrix (four-field table) for analyzing the results of a cohort study. Indicators calculated based on the results of a cohort study (incidence, attributive risk, relative risk, etiological proportion, odds ratio): methodology of their calculation and evaluation. Case-control research: tasks, construction, strengths and weaknesses.

12th semester (8 hours)

Topic 8. Research of the diagnostic test. Experimental studies (4hours)

General characteristics of experimental research in medicine and public health. The main ways to increase the evidence of experimental research results. Unsupervised and controlled experiments. Positive and negative controls. Parallel and cross-control: characteristics, application conditions. "Blind" research: the concept, tasks of "blinding", types of "blinding", evidence-based results. Randomization: concept, tasks. The simplest methods of randomization (random, rank, block, stratification), their characteristics and implementation technology. Pair-conjugate selection (copy-pair method): concept and execution technology.

Topic 9. Clinical and economic research (4 hours).

The concept of clinical and economic analysis, its possibilities and limitations. The nature and classification of costs associated with medical intervention. Types of effectiveness of medical activity (medical, social, economic), their essence and content. Basic methods of clinical and economic analysis. The "cost minimization" method: the concept, its limited application in medical research. Cost-effectiveness method as a basis for clinical and economic research: calculation and comparison of correlation coefficients. Cost-benefit method: concept, general characteristics, application. Health-related quality of life: a concept, methodology for studying and evaluating it. Evaluation of the result of medical intervention by calculating the QALY indicator. Cost-utility analysis method: concept, general characteristics, application. Features of building clinical and economic research (formulation of the researcher's economic position, comparative nature, collection of information on costs, etc.).

III. EDUCATIONAL AND METHODOLOGICAL SUPPORT OF STUDENTS ' INDEPENDENT WORK

Educational and methodological support for independent work of students in the discipline includes::

- schedule of independent work in the discipline;
- characteristics of tasks for students ' independent work and methodological recommendations for their implementation;
- requirements for the presentation and design of the results of independent work;
- criteria for evaluating the performance of independent work.

Schedule of independent work in the discipline

№ n/	a Date/time of completion	Typeofindependentwork	Approximate execution time limits (hour)	Controlform
11 semester				

1	Duringthesemester	Preparationforclasses	10 hours	of OQ-1 Interview / oral questions
2	15-17 weeks	Preparationforthetest.	16hours	of OQ -1- Interview WW-1 Test Pass-fail
12 semester				
	4-17 weekofthesemester	Report. Individualtask	20 hours	WW-4 Abstract
3	4-17 weekofthesemester	Presentation of a presentation on the topic of the abstract. Presentation of the results of an individual task	20 hours	OQ-3-Report, message
4	16-17 weekofthesemester	Defense of the prepared scientific article. Preparationforthetest.	24hoursa	OQ-1-Interview WW-1 Test WW-9 Writing a scientific paper
Total:			90 hours	

Recommendations for independent work of students

Planning and organizing the time allotted for completing tasks of independent work.

After studying the schedule of independent work, you should organize it correctly. It is recommended to study the structure of each task, pay attention to the schedule of work, and report on each task in the last week according to the schedule. Please note that the results of independent work affect the final assessment based on the results of mastering the academic discipline.

Working with literature.

When performing a number of tasks, you need to work with literature. It is recommended to use various opportunities for working with literature: collections of the FEFU Scientific Library (<http://www.dvfu.ru/library://www.dvfu.ru/library/>) and other leading universities in the country, as well as available scientific library systems.

When performing independent work, including when writing a report, it is recommended to work with the following types of publications::

a) Scientific publications intended for scientific work and containing theoretical and experimental data on research. They can be published in the form of: monographs, scientific articles in journals or in scientific collections.

b) Educational literature is divided into:

- educational publications (textbooks, manuals, lecture texts) that contain the most complete systematic presentation of the discipline or any of its sections;

- reference books, dictionaries, and encyclopedias – publications containing brief information of a scientific or applied nature that are not intended for continuous reading. Their goal is to quickly get the most general ideas about the subject.

There are two methods of working on sources:

- continuous reading is mandatory when studying a textbook, chapters of a monograph or article, that is, what has educational significance. As a rule, it requires repeated reading in order to understand what is written. Try not to skip comments, footnotes, or reference materials when reading a full page, as they are intended to explain and help. Analyze drawings (maps, diagrams, graphs) and try to understand what trends and patterns they reflect.

- the method of selective reading complements continuous reading; it is used to search for additional, clarifying necessary information in dictionaries, encyclopedias, and other reference publications. This method is extremely important for repeating what you have learned and consolidating it, especially when preparing for the test.

In order for each method to have the greatest effect, you need to record all the important points related to the topic you are interested in.

Abstracts are the main points of a scientific work, article, or other work, and possibly an oral presentation; they contain more information than a plan. Simple theses are concise in form; complex ones-in addition to the main author's idea, they contain a brief justification and evidence that gives the theses a more weighty and convincing character. Abstracts of what you read allow you to reveal its content more deeply; by learning to express the essence of what you read in abstract form, you will be able to identify the most important and valuable thoughts of the authors and make generalizations.

A synopsis is a way to independently present the contents of a book or article in a logical sequence. When taking notes on a source, one should strive to say a lot in a few words. In the text of the summary, it is advisable to include not only conclusions or statements, but also their reasoned proofs (facts, figures, quotes).

You can also write a synopsis as you study the work, for example, if you are working on a monograph or several journal articles.

When writing a thesis or synopsis, always make links to the pages from which you took the abstract statement or fact. This will help you reduce the time spent searching for the right place in the book, if there is a need to understand the issue more deeply or clarify something when writing written works.

Guidelines for writing an abstract

Abstract – a student's creative activity that reproduces in its structure the research activity aimed at solving theoretical and applied problems in a particular

branch of scientific knowledge. Because of this, coursework is the most important component of the educational process in higher education.

Abstract, being a model of scientific research, is an independent work in which the resident solves a problem of a theoretical or practical nature, applying scientific principles and methods of this branch of scientific knowledge. The result of this scientific search can have not only subjective, but also objective scientific novelty, and therefore can be presented for discussion by the scientific community in the form of a scientific report or a message at a scientific and practical conference, as well as in the form of a scientific article.

The abstract is carried out under the supervision of a scientific supervisor and involves the acquisition of skills in building business cooperation based on ethical standards of scientific activity. Purposefulness, initiative, unselfish cognitive interest, responsibility for the results of one's actions, conscientiousness, competence are personality qualities that characterize the subject of research activities that correspond to the ideals and norms of modern science.

An abstract is an independent academic and research activity of a resident. The supervisor provides consultative assistance and evaluates the process and results of the activity. He / she provides an approximate topic of abstract works, clarifies the problem and research topic together with the resident, helps to plan and organize research activities, sets the time and minimum number of consultations. The supervisor accepts the text of the abstract for review at least ten days before the defense.

Traditionally, there is a certain structure of the abstract, the main elements of which, in order of their arrangement, are the following:

1. Title page.
2. Task.
3. Table of contents.
4. A list of symbols, symbols, and terms (if necessary).
5. Introduction.
6. The main part.
7. Conclusion.
8. Bibliographic list.
9. Applications.

The title page indicates: the educational institution, the issuing department, the author, the supervisor, the research topic, the place and year of completion of the abstract.

The title of the abstract should be as brief as possible and fully correspond to its content.

The table of contents (content) reflects the names of the structural parts of the abstract and the pages where they are located. It is advisable to place the table of contents on a single page at the beginning of the work.

A detailed introduction is a mandatory requirement for the abstract. Despite the small volume of this structural part, its writing causes considerable difficulties. However, it is precisely a well-executed introduction that is the key to understanding the entire work, which testifies to the author's professionalism.

Thus, the introduction is a very important part of the abstract. The introduction should begin with a justification of the relevance of the chosen topic. When applied to an abstract, the concept of "relevance" has one special feature. It depends on how the author of the abstract knows how to choose a topic and how correctly he understands and evaluates this topic from the point of view of modernity and social significance, characterizes his scientific maturity and professional readiness.

In addition, in the introduction, it is necessary to isolate the methodological basis of the abstract, to name the authors whose works formed the theoretical basis of the research. The review of literature on the topic should show the author's thorough acquaintance with special literature, his ability to systematize sources, critically examine them, highlight the essential, determine the main thing in the current state of knowledge of the topic.

The introduction reflects the meaning and relevance of the chosen topic, defines the object and subject, the purpose and objectives, and the chronological framework of the study.

The introduction concludes with a statement of general conclusions about the scientific and practical significance of the topic, the degree of its study and availability of sources, and a hypothesis.

The main part sets out the essence of the problem, reveals the topic, defines the author's position, provides factual material as an argument and illustrations of the proposed provisions. The author needs to show the ability to consistently present the material while simultaneously analyzing it. Preference is given to the main facts, rather than small details.

The abstract ends with the final part, which is called "conclusion". Like any conclusion, this part of the abstract serves as a conclusion determined by the logic of research, which takes the form of a synthesis of the accumulated scientific information in the main part. This synthesis is a consistent, logically coherent presentation of the results obtained and their correlation with the general goal and specific tasks set and formulated in the introduction. It is here that the so-called "inference" knowledge is contained, which is new in relation to the original knowledge. The conclusion may include practical suggestions, thereby increasing the value of theoretical materials.

So, in the conclusion of the abstract should be:

- a) the conclusions of the study are presented;
- b) theoretical and practical significance, novelty of the abstract;
- c) the possibility of applying the results of the study is indicated.

After the conclusion, it is customary to place a bibliographic list of references. This list is one of the essential parts of the abstract and reflects the independent creative work of the author of the abstract.

The list of sources used is placed at the end of the paper. It is written either in alphabetical order (by the author's last name or the title of the book), or in the order of references in the text of the written work. In all cases, the full title of the work, the names of the authors or the editor of the publication, if a team of authors participated in writing the book, data on the number of volumes, the name of the city and publishing house where the work was published, the year of publication, and the number of pages are indicated.

The procedure for submitting an abstract and its evaluation

Abstracts are written by students during the semester within the time limits set by the teacher for a specific discipline, reported by the student and submitted for discussion. The printed version is given to the teacher who leads the discipline.

Based on the results of the examination, the student is awarded a certain number of points, which is included in the total number of student points scored during the semester. When evaluating an abstract, it takes into account the correspondence of the content to the chosen topic, the clarity of the structure of the work, the ability to work with scientific literature, the ability to pose a problem and analyze it, the ability to think logically, the possession of professional terminology, and the literacy of the design.

Guidelines for preparing presentations

To prepare a presentation, we recommend using: PowerPoint, MS Word, AcrobatReader, and the LaTeX package beamer. The simplest program for creating presentations is MicrosoftPowerPoint. To prepare the presentation, you need to process the information collected during the writing of the abstract.

Presentation preparation sequence:

1. Clearly state the purpose of the presentation.
2. Determine what the format of the presentation will be: a live performance (then how long it will last) or an email newsletter (what the context of the presentation will be).
3. Select the entire content part for the presentation and build a logical chain of presentation.
4. Identify key points in the text content and highlight them.

5. Define the types of visualizations (images) to display on slides in accordance with the logic, purpose, and specifics of the material.

6. Choose a design and format your slides (the number of images and text, their location, color, and size).

7. Check the visual perception of the presentation.

Visualization types include illustrations, images, diagrams, and tables. An illustration is a representation of a real visual series. Images – unlike illustrations – are a metaphor. Their purpose is to evoke an emotion and create an attitude towards it, to influence the audience. With the help of well-thought-out and imaginable images, information can stay in a person's memory for a long time. Diagram-visualization of quantitative and qualitative relationships. They are used for convincing demonstration of data, for spatial thinking in addition to logical thinking. Table – a specific, visual and accurate display of data. Its main purpose is to structure information, which sometimes makes it easier for the audience to perceive the data.

Practical tips for preparing a presentation.

- printed text + slides + handouts are prepared separately.
- slides – a visual presentation of information that should contain a minimum of text, a maximum of images that carry a semantic load, and look clear and simple.
 - text content of the presentation – oral speech or reading, which should include arguments, facts, evidence, and emotions.
 - The recommended number of slides is 17-22.
 - mandatory information for the presentation: subject, surname and initials of the speaker; message plan; brief conclusions from all that has been said; list of sources used;
 - handout material – should provide the same depth and reach as a live presentation: people trust what they can carry with them more than disappearing images, words and slides are forgotten, and the handout remains a constant tangible reminder; handout material is important to distribute at the end of the presentation; handouts should be different from slides, they should be more informative.

Creative problem-oriented independent work (TSR), focused on the development of intellectual skills, a set of general professional and professional competencies, and increasing the creative potential of students. TSR can include the following types of work on the main problems of the course:

- search, analysis, structuring and presentation of information,
- performing calculation and graphic works;
- research work and participation in scientific student conferences, seminars

and Olympiads;

- analysis of scientific publications on a pre-determined topic by the teacher;
- analysis of statistical and factual materials on a given topic, performing calculations, drawing up diagrams and models based on statistical materials.

Individual task of the student

In the course of independent work, the student performs an individual task:

1. Formulates the topic of scientific research with the help of the supervisor.
2. Formalizes the relevance of their future research, which reveals the scientific problem, the degree of its disclosure and resolution in modern scientific literature, contradictions in the authors' judgments. The student determines the direction of their scientific research
3. The student, with the help of the supervisor, formulates the goal of scientific research and tasks that reveal ways to achieve the goal.
4. The student formulates an approximate layout of the design of scientific research, defines the object, subject and methods of research.
5. The student generally formulates the results that he wants to get as a result of research.
6. The student presents a plan for the implementation of the upcoming study.
7. The student prepares a presentation for submission to the conference of FEFU students based on the materials of their research.

IV. MONITORING PROGRESS TOWARDS COURSE GOALS

n/a number	Supervised modules/ sections / topics of the discipline	Code of the competence achievement indicator	Learning outcomes	Evaluation tools-name	
				current control	Interim control
1	Module I.. Working with scientific information sources	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 Interview, WW-1 Test, OQ -3 Report, message	Test Question 1-6
			Able to	: WW-4 Abstract:	
			Skilled in	WW-9 Project / writing of a scientific article	

2	Module II. Scientific text	PC-16.1 PC -16.2 PC-17.2	knows	OQ -1 Interview, WW-1 Test, OQ -3 Report	Test Question 7-12
			Able to	WW-4 Abstract.	
			Skilled in	WW-9 Project / writing of a scientific article	
3	Module III. Organization of medical scientific research	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 Interview, WW-1 Test, OQ-3 Report, message	Test Question 13-18
			Able to	WW-4 Abstract.	
			Skilled in	WW-9 Project / writing of a scientific article	
4	Module IV. Design of scientific medical research	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 Interview, WW-1 Test, OQ-3 Report	Test Question 18-24
			Able to	WW-4 Abstract.	
			Skilled in	WW-9 Project / writing of a scientific article	

Standard control tasks, methodological materials defining the procedures for assessing knowledge, skills and /or work experience, as well as qualitative assessment criteria that describe the level of competence formation are presented in section VIII.

V. LIST OF EDUCATIONAL LITERATURE AND INFORMATION AND METHODOLOGICAL SUPPORT OF THE DISCIPLINE

Primary

1. Metodologiyaimetodynauchnogoissledovaniya :uchebnoeposobiedlyavuzov [Methodology and methods of scientific research: a textbook for universities]. Ukolova. - Moscow: Yurayt Publishing House, 2020. - 154 p — - (Higher education). — ISBN 978-5-534-02890-4. - Text : electronic // Educational platform Yurayt [website]. — URL: <https://urait.ru/bcode/453479>
2. Kapralova D. O. Metodologiyanauchnogotvorchestva [Methodology of scientific creativity]: study.-method. manual / D. O. Kapralova. Moscow: Russian University of Druzhby narodov, 2018, 60 p. // IPRbooks: electron. - bibl. system. – URL: <http://www.iprbookshop.ru/104222.html>
3. Medvedev, P. V. Nauchnyeissledovaniya: ucheb. manual / P. V. Medvedev, V. A. Fedotov, G. A. Sidorenko. Orenburg: Orenburg State University, EBS DIA, IPK "University", 2017, 100 p. // IPRbooks : electron.- bibl. system. – URL: <http://www.iprbookshop.ru/71293.html>
4. Methods of scientific research: textbook.-method. manual / comp. by S. Y. Makhov. - Orel: Mezhhregion. Academy of Security and Survival (MABIV), 2019, 164 p. / / IPRbooks: electron.- bibl. system. – URL: <http://www.iprbookshop.ru/95404.html>

Additional

1. Aksyanova A.V. Statistics of innovations. Problematika, metodologiyaiperspektivyissledovaniy [Problematika, methodology and prospects of research]. - Electron. text data. - Kazan: Kazan National Research Technological University, 2015. - 87 p. — 978-5-7882-1864-9. - Access mode: <http://www.iprbookshop.ru/64004.html>
2. Kentbaeva B. A. Metodologiyanauchnykhissledovaniy [Methodology of scientific research]. - Electron. text data. - Almaty: Nur-Print, 2014. - 209 p. — 978-601-241-535-3. - Available at: <http://www.iprbookshop.ru/69140.html>
3. Kravtsova E. D. Logikaimetodologiyanauchnykhissledovaniy [Logic and methodology of scientific research]. manual / E. D. Kravtsova, A. N. Gorodishcheva. Krasnoyarsk: Sib. feder. un-t, 2014. - 168 p. - ISBN 978-5-7638-

2946-4-Access mode: <http://znanium.com/catalog.php?bookinfo=507377>

4. Methodology of scientific research [Electronic resource]: textbook / D. E. Abramnikov [et al.]. — Electron. text data. - Novosibirsk: Novosibirsk State University of Architecture and Civil Engineering (Sibstrin), 2015. - 317 p. — 978-5-7795-0722-6. - Available at: <http://www.iprbookshop.ru/68787.html>

5. Skvortsova L. M. Metodologiyanauchnykhissledovaniy [Methodology of scientific research]. - Electron. text data. Moscow: Moscow State University of Civil Engineering, IP Er Media, EBS DIA, 2014. 79 p. - 978-5-7264-0938-2. Availableat: <http://www.iprbookshop.ru/27036.html>

6. Trubitsyn V. A., Porokhnya A. A., Meleshin V. V. Osnovynauchnykhissledovaniy [Fundamentals of scientific research]. - Electron. text data. Stavropol: North Caucasus Federal University, 2016, 149 p. 2227-8397. Available at: <http://www.iprbookshop.ru/66036.html>

Electronic resources

1. Catalog of Russian State LibrariesandLibraries <http://aleph.rsl.ru>
Classification of medical research methods <http://zodorov.ru/klassifikaciya-metodov-medicinskih-issledovaniy.html>
2. Human clinical trials
http://studbooks.net/1787516/meditsina/klinicheskie_issledovaniya_na_cheloveke
3. Methodology of scientific research
<http://mirznanii.com/a/169085/metodologiya-nauchnykh-issledovaniy>
4. Scientific Electronic Library <http://elibrary.ru/>
5. Scientific and educational portal: <http://www.med-edu.ru/>
6. The concept and types of medical and biological research
http://studbooks.net/1787518/meditsina/ponyatie_vidy_mediko_biologicheskikh_issledovaniy
7. The concept of scientific research. Виды исследований
https://studopedia.ru/14_87877_ponyatie-nauchnogo-issledovaniya-vidi-issledovaniy.html

VI. METHODOLOGICAL GUIDELINES FOR MASTERING THE DISCIPLINE

Planning and organizing the time allotted for studying the discipline. You should start learning the discipline immediately at the very beginning of the academic semester. It is recommended to study the structure and main provisions of the discipline's Work Program. Please note that in addition to classroom work (lectures, practical exercises), independent work is planned, the results of which affect the final assessment based on the results of mastering the academic discipline. All tasks (classroom and independent) must be completed and submitted for evaluation in accordance with the schedule.

In the course of studying the materials of the training course, the following forms of work are offered: lectures, practical exercises, tasks for independent work.

Lectures are aimed at covering introductory topics in each section of the course and are designed to orient students in the proposed material, lay scientific and methodological foundations for further independent work of students.

Practical exercises are a collective form of reviewing educational material. Control of the results of independent work is carried out during practical classes, oral surveys, interviews, solving situational problems, control works, including by testing.

1. The student should prepare for the practical lesson: repeat the lecture material, read the necessary section on the topic in the textbook.

2. The lesson begins with a quick frontal oral survey on a given topic.

3. In the classroom, students work with lecture notes, slides.

4. For classes, you must have a notebook for writing down theoretical material, a textbook.

5. At the end of the lesson, homework is given on a new topic and it is suggested to make tests based on the material passed, which were studied in the lesson (summary).

6. Students' performances and activity per class are evaluated by the current grade.

The theoretical part of the discipline "Methodology of scientific research in medicine" is revealed in lectures, since the lecture is the main form of training, where the teacher gives the basic concepts of the discipline.

The sequence of presentation of the material in the lecture sessions is aimed at forming an approximate basis for students to learn the material later when working independently.

In practical classes, during discussions in seminars, when discussing research

papers and in classes using active learning methods, students learn to analyze and predict the development of medical science, reveal its scientific and social problems, questions of ethics and deontology.

Practical classes of the course are conducted in all sections of the curriculum. Practical works are aimed at developing students' skills of independent research work. In the course of practical classes, the student performs a set of tasks that allow you to consolidate the lecture material on the topic under study, get basic skills in the field of building diets for various population groups, taking into account their physiological characteristics. Active consolidation of theoretical knowledge is facilitated by discussing problematic aspects of the discipline in the form of seminars and classes using active learning methods (ALM). At the same time, the skills of independent research activity are developed in the process of working with scientific literature and periodicals, and the ability to defend one's point of view in a reasoned manner, listen to others, answer questions, and conduct a discussion is formed.

The purpose of conducting practical classes is to consolidate the knowledge gained by students at lectures, model practical situations, and also check the effectiveness of independent work of students.

The practical session usually includes an oral survey of students on the issues of the seminar sessions. At the same time, the degree of proficiency of graduate students in the material of the lecture course, basic textbooks, knowledge of current problems and the current situation in modern scientific activity is revealed. Further, the ability of students to apply the acquired theoretical knowledge to the planning and organization of scientific research, the ability to formalize the knowledge obtained during the study of scientific literature in reviews and articles is revealed.

A special feature of practical classes is the preparation of an abstract for the planned scientific research, which includes the formulation of the topic of scientific work, justification of relevance, formulation of research goals and objectives, expected results and presentation of the work plan.

It is advisable to start preparing for a practical lesson by repeating the material of the lectures. In the course of independent work, the student first needs to study the material presented in the educational literature and monographs recommended by the teacher. Students should pay attention to the fact that the library list includes not only basic textbooks, but also more in-depth sources for each course topic. Consistent study of the subject allows the student to form a stable theoretical base.

In the course of independent work, the student first of all needs to independently study the current scientific literature presented in monographs, literary reviews, articles, scientific collections in order to determine promising areas of research.

For each lesson, students prepare for discussion materials necessary for planning scientific research and presenting the results of scientific activities.

The main types of independent work of students are working with literary sources and methodological recommendations on the history of medicine, bioethical problems, Internet resources for more in-depth acquaintance with individual problems of the development of medicine and bioethics. The results of the work are presented in the form of abstracts or reports with subsequent discussion. Abstract topics correspond to the main sections of the course. They are used as active learning methods in practical classes: press conference, extended conversation.

A detailed conversation involves preparing students for each issue of the lesson plan with a single list of recommended mandatory and additional literature. Reports are prepared by students on a pre-proposed topic.

Press conference. The teacher instructs 3-4 students to prepare short reports. Then one of the participants of this group makes a report. After the report, students ask questions, which are answered by the speaker and other members of the expert group. On the basis of questions and answers, a creative discussion is developed together with the teacher.

Independent work on the course is particularly important for the professional training of students *самостоятельная работа*. In the course of this work, students select the necessary material on the subject under study and analyze it. Students should familiarize themselves with the main sources, without which it is impossible to fully understand the problems of the course.

Mastering the course contributes to the development of skills for sound and independent assessments of facts and concepts. Therefore, in all forms of knowledge control, especially when passing the test, attention is paid to understanding the course's problems, the ability to apply knowledge practically and draw conclusions.

Working with literature. It is recommended to use various opportunities for working with literature: collections of the FEFU Scientific Library and electronic libraries (<http://www.dvfu.ru/library://www.dvfu.ru/library/>), as well as other scientific library systems available for use.

Oral interviews are conducted to conduct ongoing monitoring and interim certification.

Preparation for the test. Students who have completed all the tasks provided for in the discipline's curriculum and attended at least 85% of classroom classes are allowed to take the test.

Oral surveys and testing on various topics of the discipline are conducted to conduct ongoing monitoring and interim certification.

VII. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE

The list of material-technical and software support of the discipline is given in the table.

Name of special premises and premises for independent work	Equipment of special rooms and rooms for independent work	List of licensed software. Details of the supporting document
<p>690922, PrimorskyKrai, Russia Vladivostok, Russian Island, Saperny Peninsula, Ajax settlement, 10M422 Training room for conducting seminars and lectures</p>	<p>Multimedia audience: Lenovo C360G-i34164G500UDK monoblock; ProjectaElproElectrol projection screen, 300x173 cm; Multimedia projector, Mitsubishi FD630U, 4000 ANSI Lumen, 1920x1080; Plug-in interface with TLS TAM 201 Stan automatic cable retraction system; Avervision CP355AF document camera; Sennheiser EW 122 G3 UHF lavalier microphone radio system as part of a wireless microphone and receiver; LifeSizeExpress 220 - Codeonly - Non-AES video conferencing codec; Multipix MP-HD718 network video camera; Two 47", Full HD, LG M4716CCBA LCD panels; Audio commutation and sound reinforcement subsystem; Centralized uninterrupted power supply Educationalfurniture, whiteboard</p>	<p>Windows Seven Enterprise SP3x64Operatingsystem Microsoft Office Professional Plus 2010 an office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.); 7Zip 9.20-a free file archiver with a high degree of data compression; ABBYY FineReader 11 - a program for optical character recognition; Adobe Acrobat XI Pro 11.0.00-a package programs for creating and viewing electronic publications in PDF format; WinDjView 2.0.2-a program for recognizing and viewing files with the same format as DJV and DjVu.</p>
<p>Multimedia audience Vladivostok, Russian Island, Ajax 10, Building 25.1, room M723 Area 80.3 m2 (Room for independent work)</p>	<p>Monoblock Lenovo C360G-i34164G500UDK 19.5" Intel Core i3-4160T 4GB DDR3-1600 SODIMM (1x4GB)500GB Windows Seven Enterprise - 12 pieces; Wired LAN network-Cisco 800 series; wireless LAN systems for students are provided with a system based on access points 802.11 a/b/g/n 2x2 MIMO(2SS).</p>	<p>Windows Seven Enterprise SP3x64Operating roomsystem Microsoft Office Professional Plus 2010 system is an office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.); 7Zip 9.20 - a free file archiver with a high degree of data compression; ABBYY FineReader 11 - a program for optical character recognition; Adobe Acrobat XI Pro 11.0.00-a software package for creating and viewing electronic publications in PDF format; WinDjView 2.0.2-a program for recognizing and viewing files with the same format as DJV and DjVu.</p>
<p>Reading rooms of the FEFU Scientific Library with open access to the fund (building</p>	<p>Monoblock HP ProOpe 400 All-in-One 19.5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB),</p>	<p>Windows Seven Enterprise SP3x64Operatingsystem Microsoft Office Professional</p>

A-level 10) (Roomforindependentwork)	1TB HDD 7200 SATA, DVD+/-RW, GigEth, Wi-Fi, W, usbkbd/mse, Win7Pro (64-bit)+Win8.1Pro (64-bit), 1-1-1 Wty Internet access speed 500 Mbps. Workplaces for people with disabilities are equipped with displays and Braille printers; equipped with: portable devices for reading flat-screen texts, scanning and reading machines, a video magnifier with the ability to adjust color spectra; magnifying electronic magnifiers and ultrasonic markers	Plus 2010 an office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.); 7Zip 9.20-a free file archiver with a high degree of data compression; ABBYY FineReader 11 - a program for optical character recognition; Adobe Acrobat XI Pro 11.0.00-a package programs for creating and viewing electronic publications in PDF format; WinDjView 2.0.2-a program for recognizing and viewing files with the same format as DJV and DjVu.
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For conducting training sessions in the discipline, as well as for organizing independent work, students have access to the following laboratory equipment and specialized offices that meet current sanitary and fire safety standards, as well as safety requirements for conducting educational and research and production work.

In order to provide special training conditions for disabled people and persons with disabilities, all FEFU buildings are equipped with ramps, elevators, lifts, specialized places equipped with restrooms, information and navigation support signs.

VIII. VALUATION FUNDS

For the discipline Clinical Pharmacology, the following evaluation tools are used:

Oral questioning:

1. Interview (OQ-1)
2. Presentation / report (OQ-3)

Written papers:

1. Test (WW-1)
2. Abstract (WW-4)
3. Project/ Scientific paper preparation (WW -9)

Oral Questioning

An oral survey allows you to evaluate the knowledge and horizons of the student,

the ability to logically construct an answer, the possession of monologue speech and other communication skills.

Interview (I-1) is a means of control organized as a special conversation between a teacher and a student on topics related to the discipline being studied, and designed to determine the amount of knowledge of the student in a particular section, topic, problem, etc.

Presentation / message (P-3) - a product of the student's independent work, which is a public performance to present the results of solving a specific educational, practical, educational, research or scientific topic.

Written papers

A written answer teaches to the accuracy, conciseness, coherence of the presentation of thought. Written verification is used in all types of control and is carried out both in classroom and extracurricular work.

Test (WW-1) is a system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student.

Reference paper (WW-4) - The product of the student's independent work, which is a summary in writing of the results of the theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the problem under study, gives different points of view, as well as his own views on it .

Writing a scientific article (PR-9) is a tool that allows you to assess the student's ability to write down the essence of the problem, to independently analyze this problem using the concepts and analytical tools of the relevant discipline, to draw conclusions and recommendations for practical healthcare.

Methodological recommendations that determine the procedures for evaluating the results of mastering the discipline

Evaluation tools for intermediate certification

Intermediate certification of students in the discipline "Methodology of scientific research in medicine" is conducted in accordance with local regulations of FEFU and is mandatory. Form of reporting on the discipline-credit (11th fall semester, 12nd, spring semester). Credit for the discipline can be conducted either

in the form of an oral interview, or in the form of testing. The oral test in the discipline includes answers to 2 questions.

Guidelines for passing the test

The credit is accepted by the leading teacher. If one teacher has a large number of groups or a large number of students, it is allowed to attract other teachers to help the leading teacher by order of the Director of the Department (Deputy Director for Educational Work). First of all, teachers who conducted practical classes in the discipline in groups are involved.

In exceptional cases, in coordination with the Deputy Director of the School for Academic and educational work, the Director of the Department has the right to take credit in the absence of the lead teacher.

The form of conducting the test (oral, written, etc.) is approved at a meeting of the department in agreement with the head in accordance with the work program of the discipline.

During the test, students can use the work program of the discipline, as well as with the permission of the teacher conducting the test, reference literature and other manuals (textbooks, study guides, recommended literature, etc.).

The time given to the student to prepare for the answer on the test should be no more than 20 minutes. After this time, the student should be ready to answer.

The presence of unauthorized persons (other than those performing the examination) at the test without the permission of the relevant persons (the rector or vice-rector for Academic and Educational Work, the school director, the head of the OPOP or the Director of the Department) is not allowed. Disabled people and persons with disabilities who do not have the ability to move independently are allowed to take credit with accompanying persons.

During the intermediate certification, students are assigned a grade of "credited" or "not credited".

Only the entry "credited" is entered in the student's credit book, the entry "not credited" is entered only in the exam sheet. If a student fails to show up for the test, an entry "failed to show up" is made in the statement.

Questions for the test:

1. The concept of scientific knowledge.
2. General characteristics of the process of scientific cognition.
3. Methodology as a philosophical teaching about the methods of cognition and transformation of reality, the application of the principles of worldview to the process of cognition, spiritual creativity and practice.

4. Formulate a definition of the concept of "Methodology" in the broad and narrow sense of the word, the functions of methodology.
5. List and describe the methodological principles.
6. Reveal the specifics of scientific knowledge and its main differences from spontaneous – empirical.
7. List the main components of the scientific research apparatus and give a brief content description of each of them.
8. Name and describe the main criteria for evaluating the results of scientific research.
9. Reveal the essence of the concept of "method". Define the term "scientific method".
10. Give an essential description of such methods as questionnaires, interviews, testing, expert surveys, and sociometry.
11. Describe the features of applying the methods of scientific literature and archival data.
12. The essence and role of the experimental method in scientific research. Justify the most important conditions for the effectiveness of its implementation. Stages of the experiment.
13. Explain the essence and specifics of theoretical knowledge. List its main forms.
14. Define such categories of theoretical knowledge as "thinking", "reason", "concept", "judgment", "inference", "intuition".
15. What are the main requirements that any scientific theory should meet?
16. Describe the features of using general scientific logical methods in scientific research.
17. What is the essence of quantitative measurement in scientific research?
18. What should we proceed from when defining the topic, object, subject, goal, objectives, and hypothesis of the study?
19. Formulate a definition of the concept of "research methodology". Explain that the methodology of scientific research is always specific and unique.

20. What is meant by systematization of research results? What are the purposes of testing the results of scientific work?

21. What stages does the process of introducing research results into practice consider?

22. List the requirements that are imposed on the content, logic, and methodology of presenting research material in a scientific paper. What are the main parts of a scientific paper?

23. What are the main requirements that a clinical trial should meet?

24. What stages does the process of implementing the results of a clinical trial include?

Criteria for grading a student on the test

Students who have completed the training program in the discipline and passed all stages of the current certification are allowed to take the test.

Evaluation	Competencies
"passed"	The student showed a detailed answer, which is a coherent, logical, consistent disclosure of the question posed, a broad knowledge of literature. The student showed an understanding of the material, the validity of judgments, the ability to apply the acquired knowledge in practice. There may be some inaccuracies in the answer, which the student corrects independently.
"fail"	The student reveals ignorance of most of the problems associated with studying the question, makes mistakes in the answer, distorts the meaning of the text, and presents the material randomly and uncertainly. This assessment characterizes the shortcomings in the student's training, which are a serious obstacle to successful professional and scientific activities.

Evaluation tools for current certification

The current certification of students in the discipline is carried out in accordance with local regulations of FEFU and is mandatory.

Current certification is carried out in the form of control activities (interviews, presentations, essays, test tasks, test papers) to assess the actual results of students' training and is carried out by a leading teacher.

The following objects are evaluated:

- academic discipline (activity in the classroom, timely completion of various

types of tasks, attendance at all types of classes in the certified discipline);

- the degree of assimilation of theoretical knowledge;
- the level of mastering practical skills in all types of academic work;
- results of independent work.

A calendar plan of control activities for the discipline is drawn up. Assessment of attendance, students' activity in the classroom, and the timeliness of completing various types of tasks is based on the journal that the teacher keeps during the academic semester.

Questions for assessing preliminary competencies

1. What is a scientific hypothesis?
2. What is a scientific concept?
3. What is a scientific theory?
4. What is the scientific picture of the world?
5. Units of length in the International System of Units
6. What is scientific analysis?
7. What is the analogy method?
8. What is modeling in scientific research?

Control tests are intended for students studying the course "Methodology of scientific research in medicine".

The tests are designed for both individual and collective solutions. They can be used in both classroom activities and independent work. The selection of tests required for the control of knowledge in the process of intermediate certification is made by each teacher individually.

When working with tests, you are asked to choose one of the three or four possible answers. At the same time, the tests are not the same in complexity. Among the suggested tests, there are several variants of correct answers. The student must provide all the correct answers.

Samples of test tasks

1. What is science?

1. system of principles and methods of organization and construction of theoretical and practical activities;

2. the highest form of human knowledge, the system of developing knowledge;
3. the study and comprehension of the critical review practice;
4. the system of concepts about the phenomena and laws of nature.

2. What is methodology?

1. method of achieving results, organization of activities, reasonable regulatory techniques;
2. the concrete embodiment of methods, the developed way of organization of interaction between subject and object of researches on the basis of concrete material and procedure;
3. the process of developing new scientific knowledge;
4. the system of principles and methods of organization and construction of theoretical and practical activities, considering the structure of scientific research and forming requirements.

3. What are the requirements of methodology?

1. analysis, generalization, validity;
2. explanation, analysis;
3. control over all conditions of the studied processes, analysis, reproducibility of the research results;
4. validity, reproducibility of research results, control over all conditions of the studied processes.

4. What is research study?

1. the system of concepts of phenomena and laws of the outside world;
2. the process of developing the new scientific knowledge;
3. the process of cognition at the empirical level;
4. description of problem situation.

5. What does the population mean?

1. this is part of the study population, which researcher intends to study;
2. property of the sample representing the main characteristic of the population;
3. system of specific requirements aimed at analysis and solution of the problem;
4. this is the entire population or part of it that the researcher intends to study.

6. What are three main functions of a research program?

1. methodics, diagnostics and projection;
2. methodology, technique and organization;
3. methodology, organization and information;
4. methodics, methodology and projection.

7. What is not included in the methodological part of the program?

1. description of a problem situation (relevance);
2. determining the sample size;
3. specifying goals and objectives;
4. definition of object and subject of research.

8. What is the most important part of the compositional construction and design of scientific work?

1. title page;
2. content;
3. introduction;
4. chapters of the main part.

9. A public message, a detailed presentation of any topic, most often designed for specialists in this field-is ...

1. thesis of reports;
2. scientific report;
3. scientific presentation;
4. scientific article.

10. What is monograph?

1. communication, report on the actions carried out by the researcher;
2. summary made by author about his scientific work;
3. provision summarizing any idea or idea of a report;
4. scientific work covering one topic, problem.

11. What does the questionnaire method imply?

1. questioning method of survey based on communication of researcher with respondent;

2. data collection using the questionnaire form including a set of questions organized in a certain way and addressed to respondent;
3. data collection using the questionnaire form including a set of verbal questions;
4. the method of survey, which includes a set of questions that allow respondent to speak from the position of the group, the team.

12. What types of surveys differ in the way they are distributed?

1. individual and group;
2. indirect and direct;
3. press, mail and transfer case;
4. solid and selective.

13. The method in which neither the patient nor the doctor watching him do not know which method of treatment was used is called:

1. double-blind
2. triple blind
3. single blind
4. placebo-controlled

14. A study in which the patient does not know, and the doctor knows what treatment the patient receives, is called:

1. placebo-controlled
2. double-blind
3. triple blind
4. single-blind

15. Descriptive statistics deals with:

1. comparison of the obtained data
2. set of material
3. description and presentation of data
4. justification of the obtained results

16. Data collection can be:

1. optimization
2. static and dynamic

3. constructive and deconstructive
4. passive and active

17. Experiment is:

1. the process of empirical knowledge
2. the process of measuring or observing action to collect data
3. study covering the entire population of observation units
4. mathematical modeling of reality processes

18. Methodology studies:

1. methods of preparation synthesis;
2. methods of correcting scientific errors;
3. the origin and nature of cognition methods and their characteristics.;
4. the efficiency of the methods.

19. Scientific observation is characterized by:

1. focused, planned, proactive;
2. limitation, conceptual, logical;
3. dialectic, metaphysical, natural philosophy.

20. The experiment includes:

1. induction and deduction;
2. observation and measurement;
3. analysis and synthesis.

21. The ability to detect unknown properties of an object gives:

1. the validation experiment;
2. thought experiment;
3. research experiment;
4. control experiment.

22. Abstracting and idealizing is:

1. general scientific methods of theoretical knowledge;
2. methods of measurement of physical quantities;
3. calculation methods in Excel.

23. Unit of length in the International system of units:

1. inch;
2. metre;
3. mile.

24. Formalization is:

1. language of science;
2. experiment;
3. method of measurement of physical quantities.

25. Analysis is:

1. sampling for scientific experiment;
2. the collection of chemicals in a single vessel;
3. division of the object of study into component parts.

26. Analogy is:

1. production of two or more experimental units;
2. mirror an object;
3. similarity; similarity of properties, features, or relationships of different objects.

27. Modeling is:

1. the study of the original and its replacement in the study of the object;
2. study two or more original objects at the same time;
3. study of two or more original objects in ascending order.

28. What are you known types of modeling:

1. chemical, biological, geological, astronomical;
2. mental, physical, symbolic, computer;
3. mechanical, naturalistic, dynamic, stationary

Criteria for evaluating test tasks

The results of test tasks are evaluated by the teacher on a five-point scale for certification or according to the "credit" – "non-credit" system. An "excellent" rating is given if you correctly answer more than 90% of the tests offered by the teacher. Score "good" – if you correctly answer more than 70% of the tests. Score

"satisfactory" – if you correctly answer 50% студентуof the tests offered to the student.

List of abstract topics

1. Methods of scientific cognition
2. Methods of system analysis in scientific research
3. The process of cognition, its structure and algorithm of cognition
4. Methodology of scientific research organization
5. Scientific research, its types and characteristics
6. Design and organization of scientific research
7. Methodological principles of choosing a scientific problem, research topic, object and subject of research
8. Methodological principles of selecting methods and methods of conducting scientific research
9. Principles and problems of generalization, design and presentation of scientific research results
10. Methodology for writing a scientific study
11. Scientific knowledge, its varieties, models of development of scientific knowledge
12. Scientific and non-scientific knowledge. Varieties. Philosophical and methodological basis of science as a technology for obtaining knowledge.

Abstract evaluation criteria

The stated understanding of the abstract as an integral author's text determines the criteria for its evaluation: the novelty of the text; the validity of the choice of source; the degree of disclosure of the essence of the issue; compliance with the requirements for design.

Text novelty:

- a) relevance of the research topic;
- b) novelty and independence in problem formulation, formulation of a new aspect of a known problem in establishing new connections (inter-subject, intra-subject, integration);

c) ability to work with research, critical literature, organize and structure the material;

d) clearness of the author's position, independence of assessments and judgments;

e) stylistic unity of the text, unity of genre features.

Degree of disclosure of the essence of the issue:

a) compliance of the plan with the topic of the abstract;

b) correspondence of the content to the topic and plan of the abstract;

c) completeness and depth of knowledge on the topic;

d) validity of methods and methods of working with the material;

e) ability to generalize, draw conclusions, compare different points of view on one issue (problem).

Validity of the choice of sources:

a) evaluation of the literature used: whether the most well-known works on the research topic are involved (including journal publications of recent years, recent statistics, summaries, references, etc.).

Compliance with registration requirements:

a) how well the references to the literature used and the list of references are drawn up;

b) assessment of literacy and presentation culture (including spelling, punctuation, stylistic culture), knowledge of terminology;

c) compliance with the requirements for the volume of the abstract.

The reviewer should clearly formulate a comment and questions, preferably with links to the work (you can use specific pages of the work), to research and factual data that the author did not take into account.

The reviewer can also indicate: whether the student has addressed the topic before (essays, written works, creative works, Olympiad works, etc.) and whether there are any preliminary results; how the graduate conducted the work (plan, intermediate stages, consultation, completion and revision of the written or lack of a clear plan, refusal of recommendations from the supervisor).

The student submits the abstract for review no later than one week before the defense. The reviewer is a teacher. Experience shows that it is appropriate to acquaint the student with the review several days before the defense. Opponents are assigned by a student teacher. 10-20 minutes is enough for a student to make an oral presentation.

Grade 5 "excellent" - all the requirements for writing and defending the abstract are met: the problem is identified and its relevance is justified, a brief analysis of various points of view on the problem under consideration is made and one's own position is logically stated, conclusions are formulated, the topic is fully

disclosed, the volume is maintained, the requirements for external design are met, correct answers to additional questions are given.

Rating 4 "good" – the main requirements for the abstract and its defense are met, but there are some shortcomings. In particular, there are inaccuracies in the presentation of the material; there is no logical sequence in the judgments; the volume of the abstract is not maintained; there are omissions in the design; additional questions are not fully answered during the defense.

Rating 3 "satisfactory" – there are significant deviations from the requirements for referencing. In particular, the topic is only partially covered; factual errors were made in the content of the abstract or when answering additional questions; there is no conclusion during the defense.

Grade 2 "unsatisfactory" – the topic of the abstract is not disclosed, there is a significant misunderstanding of the problem. The student has not submitted the abstract.