Ministry of Health of the Russian Federation

federal state budgetary educational institution
higher education
"North-Western State Medical University named after I.I. Mechnikov"

Ministry of Health of the Russian Federation

(Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after I.I. Mechnikov of the Ministry of Health of the Russian Federation)

DISCIPLINE WORK PROGRAM

"Information Technologies in Medicine"

Specialty: 31.05.01 General Medicine

Focus: Organization and provision of primary health care to the adult population in medical organizations

Implementation language: Russian, English

2021

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The work program of the discipline was discussed at a department meeting
Medical Informatics and Physics
April 27, 2021. Protocol No.4

Head of the department _____ / Shmatko A.D./
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Approved by the Methodological Commission for the specialty 31.05.01 General Medicine
May 11, 2021

Chairman _____ / Bakulin I.G./
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Reviewed by the Methodological Council and recommended for approval by the Academic Council
May 20, 2021

Chairman _____ / Artyushkin S.A. /
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1. The purpose of mastering the discipline

The purpose of mastering the discipline “Information Technologies in Medicine” is to develop the student’s competencies in the field of healthcare organization based on the use of information computer technologies in medicine and healthcare, practical work skills in medical information systems

2. The place of discipline in the structure of the educational program

The discipline “Information Technologies in Medicine” belongs to the mandatory part of Block 1 “Disciplines (modules)” of the main professional educational program in the specialty 31.05.01 General Medicine (specialty level of education), Focus: Organization and provision of primary health care to the adult population in medical organizations. The discipline is mandatory to study.

3. List of planned learning outcomes in the discipline, correlated with the planned results of mastering the educational program

Code and name of competency	Code and name of the competency achievement indicator
UK-1. Able to critically analyze problem situations based on a systematic approach and develop an action strategy	**ID-1 UK-1.1. Analyzes a problem situation as a system, identifying its components and connections between them**
	ID-2 UK-1.2. Identifies gaps in information needed to resolve a problem situation and designs processes to address them
	ID-3 UK-1.3. Critically evaluates the reliability of information sources, works with conflicting information from different sources
OPK-10. Able to understand the operating principles of modern information technologies and use them to solve professional problems	**ID-1 OPK-10.1. Applies modern information technologies, searches for information on the Internet to solve professional problems**
	ID-2 OPK-10.2. Maintains confidentiality when working with patient information databases
PK-8 Capable of conducting medical and statistical analysis of information on health indicators, as well as maintaining medical records	**ID-1 PC-8.1. Maintains medical documentation, including in electronic form**
	ID-2 PC-8.2. Conducts medical and statistical analysis of health indicators of the attached population

Competency achievement indicator code	Learning outcomes (assessment indicators)	Evaluation tools
ID-1 UK-1.1	**knows the properties of information, methods of analysis and evaluation of information**	Test tasks Test questions
	is able to analyze information for objectivity, reliability, and effectiveness to solve a given problem	
ID-2 UK-1.2	**knows the terminology and laws of probability theory, methods of statistical processing of data in a spreadsheet**	Test tasks Test questions
	can summarize and group data, use different measurement scales, and calculate statistical indicators	
ID-3 UK-1.3	**knows the terminology, laws, methods of**	Test tasks Test

	mathematics, computer science, cybernetics necessary for the use of electronic computers to solve standard problems of professional activity	questions
	knows how to reasonably choose mathematical methods and technical means of data processing using electronic computers	
ID-1 OPK-10.1	**knows the composition and characteristics of software, the possibilities and limitations of using information and communication technologies to solve standard problems of professional activity**	Test tasks Typical calculations Security questions
	can use system and application software of electronic computers to solve standard problems of professional activity	
	has the skill of solving standard problems of professional activity using information and communication technologies	
ID-2 OPK-10.2	**knows the composition and characteristics of software, the possibilities and limitations of using information and communication technologies to solve standard problems of professional activity**	Test tasks Typical calculations Colloquium Security questions
	can use system and application software of electronic computers to solve standard problems of professional activity	
ID-1 PC-8.1	**knows the principles of database construction, software and hardware for database management**	Test tasks
	knows how to use technical means of searching and processing information in databases	Typical calculations Security questions Educational and research project
ID-2 PK-8.2	**knows the principles of structuring information, the rules for preparing educational and research presentations**	Test tasks
	knows how to use technical tools for preparing presentations	Typical calculations Security questions Educational and research project

4. Scope of discipline and types of academic work

Type of educational work	Labor intensity	Semesters	
		I	II
Contact work between students and teachers	**72**	**36**	**36**
Classroom work:	70	36	34
Lectures (L)	24	12	12
Practical exercises (PP)	46	24	22
Independent work:	**36**	**18**	**18**
during the period of theoretical training	32	18	14
preparation for the test	4	-	4
Intermediate assessment: test, including delivery and group consultations	**2**	-	2

Total workload: academic hours	**108**
credit units	**3**

5. The content of the discipline, structured by sections (topics) indicating the number of academic hours and types of training sessions

5.1.Content of discipline sections

item no.	Name of discipline section	Annotated content of the discipline section	List of competencies formed in the process of mastering the section
1	Information technology	Theoretical foundations of computer science. Terminology, mathematical foundations of computer operation. Software for processing various types of data.	UK-1 OPK-10
2	Special sections of medical informatics	Electronic databases. Medical information systems. Search for information. Fundamentals of statistical data processing.	PK-8

5.2.Thematic plan of lectures

item no.	Name of discipline section	Lecture topics	Active forms of learning	Labor intensity (academic hours)
1	Information technology	Introduction to Medical Informatics. Collection, storage, search, processing, transformation, distribution of information in medical and biological systems.	LB	2
		Theoretical foundations of computer science. Measures of the amount of information. Encoding information. Arithmetic foundations of computer systems.	LB	2
		Logical foundations of computer systems. Algebra of logic. Analysis and minimization of logical expressions. Fuzzy logic. Relational algebra.	LB	2
		Hardware of personal computers and computer networks. Characteristics of devices included in personal computers.	LB	2
		Personal computer software. Operating systems. User interfaces. Development of operating systems. General purpose application software.	LB	2
		Use of word processors to create and edit documents of complex structure.	LB	2
		Data processing and analysis in spreadsheets. Perform calculations. Constructing diagrams. Table processor tools for working with large tables (databases).	LB	2

item no.	Name of discipline section	Lecture topics	Active forms of learning	Labor intensity (academic hours)
		Computer graphics systems, types and formats of graphic files, basics of processing graphic information.	LB	2
		Information society and computer networks. Principles of building computer networks, network protocols. Basic concepts of the Internet.	LB	2
2	Special sections of medical informatics	Strategy for integrated informatization in healthcare. Classification and implementation of medical information systems. Automated workplaces for healthcare professionals.	LB	2
		Fundamentals of statistical analysis of medical and biological data. Classification of problems that use a probabilistic approach. Random variables and types of distribution. Formalized medical data models.	LB	2
		Computer methods for statistical analysis of medical and biological data.	LB	2
		TOTAL:		24

LB – lecture-conversation

5.3.Thematic plan for practical classes

№ p/p	Name of discipline section	Topics of practical classes	Active forms of learning	Current control forms	Labor intensity (academic hours)
1	Information technology	Introduction to electronic educational resources (LMS Moodle, library databases, Interne information retrieval systems)	IT	Solving problems for standard calculations Completing colloquium assignments	4
		Working in a text editor (text formatting, integration of objects - graphics, tables, formulas)	IT	Solving problems for standard calculations Interview on control questions	4
		Process data and perform calculations in a spreadsheet	IT	Solving problems for standard calculations	4
		Creating tools for visualizing the results of data processing in a spreadsheet	IT	Solving problems for standard calculations	4

№ p/p	Name of discipline section	Topics of practical classes	Active forms of learning	Current control forms	Labor intensity (academic hours)
		Create and manage a database in a spreadsheet	IT	Solving problems for standard calculations	4
		Performing presentations using MS Power Point	IT	Solving problems for standard calculations Interview on control questions	4
		Test work	IT	Solving a situational problem	4
2	Special sections of medical informatics	Searching, structuring and primary processing of data on the Internet for an educational research project	MSh	Solving a situational problem Completing assignments for a colloquium	4
		Statistical processing of data in a spreadsheet	IT	Solving a situational problem	4
		Development of an automated statistical data processing system	IT	Solving a situational problem	4
		Presentation of the results of the educational and research project	KG	Report on the results of the educational and research project	4
		Computer testing based on the material covered	AIM	Testing	2
				TOTAL:	46

AIM - analysis of simulation models
IT - simulation training
MSh - brainstorming

5.4. Thematic plan of seminars is not provided

5.5. Thematic plan of laboratory work is not provided

5.6. Independent work:

item no.	Name of discipline section	Types of independent work	Current control forms	Labor intensity (academic hours)

item no.	Name of discipline section	Types of independent work	Current control forms	Labor intensity (academic hours)
1	Information technolog	Working with lecture material Preparing for intermediate certification events	Testing Interview on control questions	8
2	Special sections of medical informatics	Working with lecture material	Testing	8
		Working with electronic databases	Solving a situational problem	8
		Preparation of a report and presentation for an educational and research project	Report on the results of the educational and research project	8
		Preparation for intermediate certification events (for taking the test).	Testing Completing assignments for the colloquium	4
			TOTAL:	36

5.6.1. List of regulatory documents: not provided

5.6.2. Topics of educational and research projects:

1. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2020 by constituent entities of the Russian Federation (number of newly registered diseases).
2. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2018 by constituent entities of the Russian Federation (number of newly registered diseases).
3. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2016 by constituent entities of the Russian Federation (number of newly registered diseases).
4. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2014 by constituent entities of the Russian Federation (number of newly registered diseases).
5. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2012 by constituent entities of the Russian Federation (number of newly registered diseases).
6. Automated system for statistical processing of data on the incidence of acutely infectious diseases in the population of the USSR in 1940.
7. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1942.
8. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1944.
9. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1946.
10. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2017.
11. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2016.
12. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2015.

13. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2014.

6. Guidelines for students on mastering the discipline

TO SUCCESSFULLY MASTER THE ACADEMIC DISCIPLINE, THE STUDENT IS RECOMMENDED TO ATTEND LECTURES AND PRACTICAL CLASSES IN ACCORDANCE WITH THE TRAINING SCHEDULE, TIMELY AND FULLY PASS THE MIDTERM CONTROL (PERFORM TASKS FOR STANDARD CALCULATIONS IN PRACTICAL CLASSES, COMPUTER TESTS IN THE SECTIONS OF THE DISCIPLINE).

Planning and organizing the time needed to study the discipline

An important condition for successful mastery of the discipline is the creation of a system of proper organization of work, which allows you to distribute the educational load evenly in accordance with the schedule of the educational process. Drawing up a work plan for the semester, month, week, day can be of great help in this. Its presence will allow you to subordinate your free time to study purposes and work more successfully and efficiently. In the evening you should always distribute work for tomorrow. At the end of each day, it is advisable to summarize the work: carefully check whether everything was completed according to the plan, whether there were any deviations, and if there were, for what reason they occurred. It is necessary to exercise self-control, which is a necessary condition for successful study. If something remains undone, you need to find time to complete this part of the work without reducing the volume of the weekly plan. It is recommended to complete all tasks for practical classes, as well as tasks assigned for independent work, immediately after the corresponding topic of the lecture course, which contributes to better assimilation of the material, allows you to promptly identify and eliminate "gaps" in knowledge, systematize previously covered material, and on its basis begin to master new knowledge and skills.

The university education system is based on a rational combination of several types of training sessions (primarily lectures and practical classes), the work of which has certain specifics.

Preparing for lectures

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

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

It is better to divide the lecture notes into points, observing the red line. This will be greatly facilitated by the lecture plan questions proposed to the teachers. You should pay attention to the accents and conclusions that the lecturer makes, marking the most important points in the lecture material with the remarks "important", "well remember", etc. You can also do this using colorful markers or pens, emphasizing terms and definitions.

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

When working on lecture notes, it is always necessary to use not only the textbook, but also the literature that the lecturer additionally recommended. It is this kind of serious, painstaking work with the lecture material that will allow you to deeply master the theoretical material.

Preparation for practical classes and independent work

Careful thinking through and study of the plan's issues is based on studying the current lecture material, and then studying the required and additional literature recommended for this topic. All new concepts on the topic being studied must be memorized and included in a glossary, which should be kept from the very beginning of the course.

The result of such work should be manifested in the ability to freely answer theoretical questions of the workshop, speak and participate in a collective discussion of issues on the topic being studied.

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

Recommendations for working with literature

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

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

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

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

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

It is clear that the ability to work with text in this way does not come immediately. The best way to learn to highlight the main points in a text, to grasp the problematic nature of statements, and to evaluate the author’s position is comparative reading, during which you get acquainted with different opinions on the same issue, compare the weight and evidence of the parties’ arguments and draw a conclusion about the greatest persuasiveness of a particular position.

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

The next stage of working with literary sources is the creation of notes that capture the main theses and arguments. You can make notes on separate sheets of paper, which can then be easily organized into individual topics of the course being studied. Another way is to keep thematic notebooks on one topic. It is advisable to take notes on large specialized works of a monographic nature in separate notebooks. Here it is important to remember that notes are written on one side of the sheet, with margins and sufficient line spacing for corrections and remarks (these rules are observed for ease of editing). If quotations are given in the notes, then an indication of the source (author, title, imprint, page number) must certainly be given. Subsequently, this information can be used when writing another assignment.

Recommendations for preparing for routine monitoring

In order to control the mastery of the discipline, the thematic lesson plan provides for control activities that constitute means of ongoing control. In the work program of the discipline, current control is represented by tasks for standard calculations.

Successful completion of ongoing monitoring of mastering the discipline is based on the timely and complete completion by students of the teacher’s assignments for independent (out-of-class) work with lecture material, educational literature, regulatory documents, as well as work with the educational database in the Moodle LMS.

Recommendations for preparing for intermediate certification (test)

Control of mastering the discipline is carried out in the form of an interview on control questions. To successfully pass the intermediate certification, the student must independently prepare for the interview.

Admission to intermediate certification for the entire completed course is carried out based on the results of the student's successful mastery of all sections of the discipline and completion of activities related to ongoing control.

7. Evaluation materials

Assessment materials for the discipline for ongoing monitoring of progress and intermediate certification of students include examples of assessment tools (Appendix A to the work program of the discipline), procedure and assessment criteria.

8. List of educational literature and Internet resources necessary for mastering the discipline

8.1. Educational literature:

1. Remizov, A.N. Medical and biological physics: textbook / A. N. Remizov. - 4th ed., rev. and processed - M.: GEOTAR-Media, 2016. - 647 p. : count. - Subject decree: p. 642-647.
2. Zaitsev, V.M. Medical informatics. Practical medical statistics: educational method. allowance / V. M. Zaitsev; Ministry of Health of the Russian Federation. Federation, State Budget Educational Institution of Higher Professional Education North-West. state honey. University named after I. I. Mechnikova, Dept. honey. computer science and physics. - St. Petersburg. : Publishing house of North-Western State Medical University named after. I. I. Mechnikova, 2014. - 84 p. : table - (Medical education). - Bibliography: p. 83. Electronic resource: LMS MOODLE1 https://moodle.szgmu.ru/mod/resource/view.php?id=4014
3. Abdulaeva, Z. I. Information computer systems in medicine and healthcare: Educational method. manual / Z. I. Abdulaeva, A. D. Shmatko; Ministry of Health of the Russian Federation. Federation, Federal State Budgetary Educational Institution of Higher Education North-West. state honey. University named after I. I. Mechnikova, Dept. honey. computer science and physics. - St. Petersburg. : Publishing house of North-Western State Medical University named after. I. I. Mechnikova, 2017. - 43 p. : rice. - (Medical education). - Bibliography: p. 43 (11 titles). Electronic resource: DMS MOODLE1 https://moodle.szgmu.ru/pluginfile.php/178023/mod_resource/content/1/Abdulaeva Z. I., Shmatko A. D. Information computer systems in medicine and healthcare.pdf
4. Serdyukov, Yu.P. Registration of documents of complex structure in MS Word 2010: educational method. allowance / Yu. P. Serdyukov; Ministry of Health of the Russian Federation. Federation, Federal State Budgetary Educational Institution of Higher Education North-West. state honey. University named after I. I. Mechnikova, Dept. honey. computer science and physics. - St. Petersburg. : Publishing house of North-Western State Medical University named after. I. I. Mechnikova, 2017. - 52 p. : rice. - (Medical education). - Bibliography: p. 52 (4 titles). Electronic resource: LMS MOODLE1 https://moodle.szgmu.ru/pluginfile.php/178036/mod_resource/content/1/Serdyukov Yu. P. Preparation of documents of complex structure in MS Word 2010.pdf
5. 3. Gelman, V.Ya. PowerPoint 2010 package in preparing and conducting presentations: educational method. allowance / V. Ya. Gelman; Ministry of Health of the Russian Federation. Federation, Federal State Budgetary Educational Institution of Higher Education North-West. state honey. University named after I. I. Mechnikova, Dept. honey. computer science and physics. - St. Petersburg. : Publishing house of North-Western State Medical University named after. I. I. Mechnikova, 2017. - 43 p. : rice. - (Medical education). - Bibliography: p. 43 (5 titles). Electronic resource: LMS MOODLE1 https://moodle.szgmu.ru/pluginfile.php/178015/mod_resource/content/1/Gelman V. Ya. PowerPoint 2010 package in preparing and conducting presentations.pdf
6. Remizov, A. N. Medical and biological physics: textbook / A. N. Remizov. - Moscow: GEOTAR-Media, 2022. - 576 p. - ISBN 978-5-9704-7102-9. - Text: electronic // EBS "Student Consultant": [website]. - URL: https://www.studentlibrary.ru/book/ISBN9785970471029.html

8.2. Resources of the Internet information and telecommunications network:

Name of Internet resource	Email address of the resource
Journal of medical Internet research	http://www.jmir.org
Information and educational system for medical practitioners	http://www.rosmedlib.ru
Russian medical portal	http://www.rosmedportal.com
EMISS	https://www.fedstat.ru/
Federal State Statistics Service	https://rosstat.gov.ru/
World Health Organization	http://www.who.int

9. List of information technologies used to master the discipline, including a list of software, professional databases and information reference systems

9.1. List of information technologies used in the educational process:

item no.	Name of discipline section	Information technology
1	Information technology	Knowledge control - testing in EIOS FSBEI HE North-Western State Medical University named after. I.I. Mechnikov Ministry of Health of the Russian Federation, https://moodle.szgmu.ru/course/view.php?id=241 Placement of educational materials in the EIOS FSBEI HE North-Western State Medical University named after. I.I. Mechnikov Ministry of Health of the Russian Federation, https://moodle.szgmu.ru/course/view.php?id=241
2	Special sections of medical informatics	Knowledge control - testing in EIOS FSBEI HE North-Western State Medical University named after. I.I. Mechnikov Ministry of Health of the Russian Federation, https://moodle.szgmu.ru/course/view.php?id=241 Placement of educational materials in the EIOS FSBEI HE North-Western State Medical University named after. I.I. Mechnikov Ministry of Health of the Russian Federation, https://moodle.szgmu.ru/course/view.php?id=241

9.2. List of software used in the educational process (licensed and freely distributed software, including domestically produced):

item no.	Software product name	License validity period	Documents confirming right to use software products
licensed software			
1	ESET NOD 32	21.10.2020 - 20.10.2021	Government contract № 07/2020
2	MS Windows 8 MS Windows 8.1 MS Windows 10 MS Windows Server 2012 Datacenter - 2 Proc MS Windows Server 2012 R2 Datacenter - 2 Proc MS Windows Server 2016 Datacenter Core	Unlimited	State contract No. 30/2013-O; Government contract No. 399/2013-OA; Government contract No. 07/2017-EA.
3	MS Office 2010 MS Office 2013	Unlimited	Government contract No. 30/2013-OA;

			Government contract No. 399/2013-OA.
4	Academic LabVIEW Premium Suite (1 User)	Unlimited	Government contract № 02/2015
licensed software of domestic production			
1	Anti-plagiarism	Subscription for 1 year. Deadline until 06/01/2021	Government contract No. 2409 dated 06/26/2020
2	“WEBINAR (WEBINAR)” VERSION 3.0	1 year	Contract 347/2020-M from 05/06/2020 VitaSoft LLC
3	"3KL e-learning environment"	1 year	Contract 348/2020-M from 05/07/2020 VitaSoft LLC
4	TrueConf Enterprise	1 year	Contract 396/2020-EA from 08/10/2020 OOO "TDYUS"
free software			
1	Google Chrome	Unlimited	Open License Agreement GNU GeneralPublicLicense
freely distributed software of domestic production			
1	Moodle	GNU	Open License Agreement GNU GeneralPublicLicense

9.3. List of professional databases and information reference systems:

item no.	Name software product	License validity period	Documents confirming right to use software products	Mode access for disabled students and persons with limited health capabilities
1.	Consultant Plus	1 year	Agreement No. 655/2020-EA	-
2.	EBS “Student Consultant”	1 year	Contract No. 307/2020-EA	http://www.studmedlib.ru/
3.	EMB “Doctor Consultant”	1 year	Contract No. 281/2020-EA	http://www.rosmedlib.ru/
4.	EBS "Ibooks.ru/ibooks.ru"	1 year	Contract № 06/2020	https://ibooks.ru
5.	EBS “IPRBooks”	1 year	Contract No. 08/2020-ZK	http://www.iprbookshop.ru/special
6.	Electronic library system “Bukap”	1 year	Contract № 05/2020	https://www.books-up.ru/
7.	EBS "Lan Publishing House"	1 year	Contract No. 395/2020-EA	https://e.lanbook.com/

10. Material and technical support of discipline

Classrooms for conducting lecture-type training sessions, group and individual consultations, ongoing monitoring of progress and intermediate certification of students, equipped with equipment and technical means of teaching: St. Petersburg, Piskarevsky Prospekt, 47, lit AL, lit R, Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after. I.I. Mechnikov of the Ministry of Health of the Russian Federation;
Equipment: board (chalk); teacher's table and chair, student tables and chairs
Technical teaching aids: multimedia projector, teacher’s laptop, system unit, monitor.

Special technical teaching aids: Roger Pen (Roger personal wireless transmitter in the form of a pen), Roger MyLink (Roger Pen system signal receiver) (for students with hearing impairments); IntelliKeys (wired keyboard with Russian Braille with a matte black finish), (St. Petersburg, Piskarevsky Prospekt, 47, lit. R (building 9), room No. 18.19, Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after I.I. Mechnikov of the Ministry of Health of the Russian Federation).

Classrooms for conducting seminar-type training sessions, group and individual consultations, ongoing monitoring of progress and intermediate certification of students, equipped with equipment and technical means of teaching: St. Petersburg, Piskarevsky Prospekt, 47, lit AL, lit R, Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after. I.I. Mechnikov of the Ministry of Health of the Russian Federation;

Equipment: tables, chairs, marker boards, chalk board.

Technical teaching aids: 110 automated workstations (ESET NOD 32, MS Windows 7, MS Office 2010, Moodle, GNU, Academic LabVIEW Premium Suite (1 User), Google Chrome).

Special technical teaching aids: Roger Pen (Roger individual wireless transmitter in the form of a pen), Roger MyLink (Roger Pen system signal receiver) (for students with hearing impairments); IntelliKeys (wired keyboard with Russian Braille with a matte black finish), (St. Petersburg, Piskarevsky Prospekt, 47, lit. R (building 9), room No. 18.19, Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after I.I. Mechnikov of the Ministry of Health of the Russian Federation).

Premises for independent work of students, equipped with computer equipment with the ability to connect to the Internet and provided with access to the electronic information and educational environment of the University: St. Petersburg, Piskarevsky Prospekt, 47, lit. AE (building 32), room. No. 1, lit. R (building 9), room. No. 18.19 FSBEI HE North-Western State Medical University named after. I.I. Mechnikov of the Russian Ministry of Health.

Appendix A

Ministry of Health of the Russian Federation

federal state budgetary educational institution
higher education
"North-Western State Medical University
named after I.I. Mechnikov"
Ministry of Health of the Russian Federation

(Federal State Budgetary Educational Institution of Higher Education North-Western State Medical University named after I.I. Mechnikov of the Ministry of Health of the Russian Federation)

EVALUATION MATERIALS

(for ongoing monitoring of progress and intermediate certification of students)

Specialty:	31.05.01 General medicine
Direction:	Organization and provision of primary health care to the adult population in medical organizations
Name of discipline:	Information Technologies in Medicine

St. Petersburg – 2021

1. List of planned learning outcomes in the discipline

Competency achievement indicator code	Learning outcomes (assessment indicators)	Evaluation tools
ID-1 UK-1.1	**knows the properties of information, methods of analysis and evaluation of information**	Test tasks Test questions
	is able to analyze information for objectivity, reliability, and effectiveness to solve a given problem	
ID-2 UK-1.2	**knows the terminology and laws of probability theory, methods of statistical processing of data in a spreadsheet**	Test tasks Test questions
	can summarize and group data, use different measurement scales, and calculate statistical indicators	
ID-3 UK-1.3	**knows the terminology, laws, methods of mathematics, computer science, cybernetics necessary for the use of electronic computers to solve standard problems of professional activity**	Test tasks Test questions
	knows how to reasonably choose mathematical methods and technical means of data processing using electronic computers	
ID-1 OPK-10.1	**knows the composition and characteristics of software, the possibilities and limitations of using information and communication technologies to solve standard problems of professional activity**	Test tasks Typical calculations Security questions
	can use system and application software of electronic computers to solve standard problems of professional activity	
	has the skill of solving standard problems of professional activity using information and communication technologies	
ID-2 OPK-10.2	**knows the composition and characteristics of software, the possibilities and limitations of using information and communication technologies to solve standard problems of professional activity**	Test tasks Typical calculations Colloquium Security questions
	can use system and application software of electronic computers to solve standard problems of professional activity	
ID-1 PC-8.1	**knows the principles of database construction, software and hardware for database management**	Test tasks
	knows how to use technical means of searching and processing information in databases	Typical calculations Security questions Educational and research project
ID-2 PK-8.2	**knows the principles of structuring information, the rules for preparing educational and research presentations**	Test tasks

	knows how to use technical tools for preparing presentations	Typical calculations Security questions Educational and research project

2. Examples of assessment tools and assessment criteria for ongoing monitoring

2.1. Examples of incoming control

Question title:An active cell is a cell:
1) for writing commands
2) including the name of the cell in which data is entered
3) which contains references to the contents of the dependent cell
4)in which data entry is performed
Question title: File archiving is:
1) file compression with a special program
2)deleting files
3) writing a file to a floppy disk
4)checking a file for a virus
Question title:The browser is not:
1)Opera
2)Amigo
3)Safari
4)Finder
5)Browzar
Question title: In Excel, the cell name is formed:
1) from column name
2) from the string name
3) from column and row names
4)arbitrary
Question title: In Excel you cannot delete:
1)column
2)line
3)cell contents
4)cell name
5)all answers are correct

Evaluation criteria, grading scale pass/fail

Rating	Description
"passed"	Completed in full – 70%-100%
"not accepted"	Partially completed – 69% or less correct answers

2.2. Examples of typical calculations

ID-1 OPK-10.1
Task 1. To complete the task, you need to copy the text from the text.pdf file into your working MS Word file. Pictures for inserting into text are located in the Picture folder. Format the text according to the assignment.
Task 2. Creation of an automated data processing system
ID-2 OPK-10.2
Task 3. Work in MS Excel. Create tables and perform calculations

Task 4. Work in MS Excel. Create tables and charts and perform calculations using the logical IF function.
Task 5. Working in MS Excel. Create an animated chart using a macro.
Task 6. Working in MS Excel. Descriptive statistics.
Task 7. Statistical processing of data in a spreadsheet (distribution form, 3 sigma rule)
ID-1 PC-8.1
Task 8. Search for information in accordance with the task:
- Organize a search, fill out the table and comment on the search results in the conclusions

Ключевая фраза	Yandex	Google	Другая поисковая система
информационные технологии в образовании			
«информационные технологии в образовании»			
медицинские информационные технологии			
«медицинские информационные технологии»			
медицинские +информационные -школьные			
медицинские информационные школьные			

Task 9. Working with the database. Open the database and create a pivot table based on the conditions formulated in the task.
ID-2 PK-8.2
Task 10. Working in MS Power Point. Make a presentation using Microsoft PowerPoint.

Evaluation criteria, grading scale for typical calculations

Rating		**Description**
"excellent"	5	The explanation of the progress of solving the problem is detailed, consistent, competent, with correct and fluent terminology; answers to additional questions are correct and clear
"good"	4	Explanation of the process of solving the problem is detailed, but not logical enough, with isolated errors in details, answers to additional questions are correct, but not clear enough
"satisfactory"	3	Explanation of the process of solving the problem is not complete enough, inconsistent, with errors, with significant difficulties and errors, answers to additional questions are not clear enough, with errors in details
"unsatisfactory"	0-2	The explanation of the progress of solving the problem is given incompletely, inconsistently, with gross errors, with a large number of errors, answers to additional questions are incorrect or missing

2.3. Example of a situational task

ID-1 OPK-10.1 ID-2 OPK-10.2

Create a table of initially admitted patients (50 people) according to the sample

№ п/п	Пациент				Артериальное давление		Диагноз
	Фамилия	Имя	Отчество	Возраст	Верхнее	Нижнее	

Fill the table with arbitrary data, except for the Diagnosis column; 3. Using the IF function, specify the diagnosis based on the data: a. If the upper limit deviates from the norm by more than 125, a diagnosis of “Hypertension” is made b. If the deviation from the norm of the upper limit is less than 115, a diagnosis of “Hypotension” is made c. In other cases, the diagnosis is “Healthy”

Create an auxiliary table

Предполагаемый диагноз	Лечащий врач
Гипотония	Иванов А.Е.
Норма	Глухов К.Л.
Гипертония	Мохов А.В.

Create a pivot table in which you indicate how many patients each doctor has 6. Using the data obtained, build a histogram (copy into Word). 7. Copy the table into Word

Assessment criteria, situational task assessment scale

Rating		**Description**
"excellent"	5	The explanation of the progress of solving the problem is detailed, consistent, competent, with correct and fluent terminology; answers to additional questions are correct and clear
"good"	4	Explanation of the process of solving the problem is detailed, but not logical enough, with isolated errors in details, answers to additional questions are correct, but not clear enough
"satisfactory"	3	Explanation of the process of solving the problem is not complete enough, inconsistent, with errors, with significant difficulties and errors, answers to additional questions are not clear enough, with errors in details
"unsatisfactory"	2	The explanation of the progress of solving the problem is given incompletely, inconsistently, with gross errors, with a large number of errors, answers to additional questions are incorrect or missing

2.4. Example of security questions

ID-1 OPK-10.1

Question 1. In any text editor similar to MS Word (on a PC, laptop, tablet, smartphone), create a file in which you specify the following:

1 sheet:

Homework on information technology in medicine

//font TimesNewRoman 18pt, bold, centered. location on the sheet - 2/3 from the top of the sheet

performed by student

group No.....

Full name

//font TimesNewRoman 14pt, left-aligned

**to quickly move to a new sheet, use "insert - pages - page break"

2 sheet:

Write what disciplines you are studying this semester with a description (briefly what this discipline studies)

//Format the written text using the formatting tools you've learned

Indicate your name and group number in the header

Question 2. Given a series of values for the hormone content in the blood of monkeys

2,5; 2,4; 2,5; 2,6; 2,5; 2,7; 2,5; 2,4; 2,4; 2,5; 2,6; 2,6; 2,6; 2,5; 2,7; 2,5; 2,5; 2,5; 2,6; 2,4; 2,3; 2,4; 2,6; 2,7; 2,4; 2,3; 2,6; 2,5; 2,4; 2,6.

It is necessary to check the fulfillment of the law of normal distribution and construct a theoretical distribution using the 3-sigma rule

ID-2 OPK-10.2

Question 2. Perform 1 search query for Omron and AND blood pressure monitors. The request must reflect the country of manufacture, the advantages and disadvantages of tonometers, and reviews. The possibility of purchasing tonometers should be excluded and their prices hidden.

Question 3. Calculate the schedule for fulfilling the turnover plan of kiosk No. 5 according to the proposed form. Filling the Mi column can be done by dragging a marker.

The values of the Vi and Oi columns are calculated using the formulas: Vi=Fi / Pi; Oi=Fi – Pi

Question 6. Given a series of values for the hormone content in the blood of monkeys

2,5; 2,4; 2,5; 2,6; 2,5; 2,7; 2,5; 2,4; 2,4; 2,5; 2,6; 2,6; 2,6; 2,5; 2,7; 2,5; 2,5; 2,5; 2,6; 2,4; 2,3; 2,4; 2,6; 2,7; 2,4; 2,3; 2,6; 2,5; 2,4; 2,6.

It is necessary to use descriptive statistics to find sample characteristics and construct a frequency polygon

Rename SHEET1 to Sheet.

Question 5: Create a table:

Attending physician | Patient | Number of visits per year

Fill the table with 25 random data.

Create a scrollbar next to the table. Specify the following parameters for it:

Minimum value: 0

Maximum value: 25

Cell Link: E3

In cell F3, enter the formula =25-R10.

Add a macro:

ID-1 PC-8.1

Question 4. Create a table with the headings: Date, Patient's name, Gender, Age, Service name, Service category, Price, Quantity, Cost

Fill out the table: enter 20 medical services.

Group data into categories.

Determine the average age of men.

Determine the average age of women.

Create a pivot table displaying the following values: Date, Service, Cost

ID-2 PK-8.2

Question 8. For the sample considered in the previous homework (Given a series of values for the hormone content in the blood of monkeys 2.5; 2.4; 2.5; 2.6; 2.5; 2.7; 2.5; 2.4; 2.4; 2.5; 2.6; 2.6; 2.6; 2.5; 2.7; 2.5; 2.5; 2.4; 2.6;

Create a macro that ranks the sample, calculates basic statistics using descriptive statistics). Highlight the minimum values in yellow and the maximum values in green in the sample.

/save the document in a format that supports macros.

//before saving, remove all values and highlighting (the file must contain only a selection)

Evaluation criteria, assessment scale for control questions

Rating		**Description**
"excellent"	5	Knows all the educational material, understands it perfectly and has thoroughly mastered it. Gives correct, conscious and confident answers to questions (within the program). In oral answers he uses literary correct language and does not make mistakes.
"good"	4	Knows all the required educational material, understands it well and has mastered it firmly. Answers questions (within the program) without difficulty. In oral answers he uses literary language and does not make gross mistakes
"satisfactory"	3	Knows basic educational material. Answers questions (within the limits of the program) with difficulty. In oral answers, he makes mistakes when presenting the material and in constructing his speech.
"unsatisfactory"	2	Does not know most of the educational material, answers, as a rule, only to the teacher’s leading questions, hesitantly. Makes frequent and serious mistakes in oral answers

2.5. Example of a colloquium assignment

ID-2 OPK-10.2

IF function.

Familiarize yourself with the theoretical material:

function syntax

using multiple conditions

nested conditions with mathematical expressions

combining multiple conditions

conditional calculations

Create a spreadsheet and calculate the data:

in cell A1 enter item no.

in cell B1 enter the student’s full name

enter points in cell C1

enter score in cell D1

3. Fill the table with 15 arbitrary data in columns A, B, C

4. In cell D1, calculate what grade the students received based on the following data: Based on the testing results, scores are given according to the following criterion: from 90 to 100 points - “excellent”, from 75 to 89 - “good”, from 60 to 74 - “satisfactory”, from 50 to 59 - “unsatisfactory”, up to 49 - “one”, less than 35 - “zero”. In other cases, an error message should be displayed.

Evaluation criteria, colloquium grading scale

Rating		**Description**
"excellent"	5	The explanation of the progress of solving the problem is detailed, consistent, competent, with correct and fluent terminology; answers to additional questions are correct and clear
"good"	4	Explanation of the process of solving the problem is detailed, but not logical enough, with isolated errors in details, answers to additional questions are correct, but not clear enough
"satisfactory"	3	Explanation of the process of solving the problem is not complete enough, inconsistent, with errors, with significant difficulties and errors, answers to additional questions are not clear enough, with errors in details
"unsatisfactory"	0-2	The explanation of the progress of solving the problem is given incompletely, inconsistently, with gross errors, with a large number of errors, answers to additional questions are incorrect or missing

2.6. Examples of educational and research project topics:

ID-1 PC-8.1 ID-2 PC-8.2

1. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2020 by constituent entities of the Russian Federation (number of newly registered diseases).
2. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2018 by constituent entities of the Russian Federation (number of newly registered diseases).
3. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2016 by constituent entities of the Russian Federation (number of newly registered diseases).
4. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2014 by constituent entities of the Russian Federation (number of newly registered diseases).
5. An automated system for statistical processing of data on the incidence of infectious diseases in the Russian population in 2012 by constituent entities of the Russian Federation (number of newly registered diseases).
6. Automated system for statistical processing of data on the incidence of acutely infectious diseases in the population of the USSR in 1940.
7. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1942.
8. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1944.

9. Automated system for statistical processing of data on the incidence of highly infectious diseases in the population of the USSR in 1946.

10. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2017.

11. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2016.

12. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2015.

13. Automated system for statistical processing of data on carbon dioxide emissions in Russia and countries of the world in 2014.

Evaluation criteria, grading scale for educational and research project

Rating		**Description**
"excellent"	5	All requirements for the implementation and protection of the results of an educational and research project have been met: the problem is identified and its relevance is justified, a brief analysis of approaches to solving the problem is made and one's own position is logically presented, conclusions are formulated, the topic is fully disclosed, the scope is maintained, the requirements for external design are met, the explanation of the progress of solving the problem is detailed, consistent, competent, with theoretical justifications, with the necessary schematic images and visual demonstrations, with correct and fluent knowledge of terminology; answers to additional questions are correct and clear
"good"	4	The basic requirements for the educational and research project and its protection have been met, but there are some shortcomings; in particular, there are inaccuracies in the presentation of the material; there is no logical consistency in judgments; the volume is not maintained; there are omissions in design; explanation of the progress of solving the problem is detailed, but not logical enough, with isolated errors in details, some difficulties in theoretical justification, schematic images and visual demonstrations, answers to additional questions are correct, but not clear enough
"satisfactory"	3	There are significant deviations from the requirements for the educational and research project; in particular: the topic is only partially covered; there were factual errors in the content or in answering additional questions; during the defense there is no conclusion, the explanation of the process of solving the problem is not complete enough, inconsistent, with errors, weak theoretical justification, with significant difficulties and errors in schematic images and visual demonstrations, answers to additional questions are not clear enough, with errors in details
"unsatisfactory"	2	The topic is not covered, a significant misunderstanding of the problem is revealed or the results of the project are not presented at all, the explanation of the progress of solving the problem is given incompletely, inconsistently, with gross errors, without theoretical justification, without the ability to provide schematic images and visual demonstrations or with a large number of errors, answers to additional questions are incorrect or missing

2.7. Examples of test tasks:

ID-1 UK-1.1.

Question name:Question No. 41

Class of objects of the same type, information about which must be taken into account in the logical data model in the form of a table

1)selection

2)cluster

3) entity

4) set

5)category

Question name:Question No. 57

The most accurate definition of the concept INFORMATION would be

1) A measure of uncertainty in the state, behavior of observed or controlled objects, in the choice of control decisions

2) Display of information about the surrounding world and the processes occurring in it using messages or recorded on some material medium

3) Meaningful and remembered properties of objects, phenomena and connections between them, as well as ways of choosing solutions to achieve the desired results

4) A set of interconnected and interdependent elements, having properties that are not inherent in each of the elements individually and contribute to the achievement of a single goal

5) A physical process whose parameters change in accordance with the transmitted message

ID-2 UK-1.2.

Question name:Question No. 19

Binary code 11111010 corresponds to hexadecimal number

1)AC

2)8D

3)FA

4)3D

5)F4

Question name:Question No. 20

The decimal number 9 corresponds to a binary number

1)1100

2)1011

3)1001

4)0111

5)1111

Question name:Question No. 42

The amount of information contained in a message about choosing one of 2 equally probable alternatives is equal to

1)One bit

2)Two bits

3)Eight bits

4)One byte

5)Two bytes

ID-3 UK-1.3

Question name:Question No. 14

According to Shannon's formula, the maximum amount of information when repeatedly choosing one of two possible alternatives is obtained if

1) The probability of one alternative is greater than the probability of another

2) The probability of one of the alternatives is 1

3) The probabilities of the two alternatives are equal
4) The probability of one of the alternatives is 0
5) The probability of one alternative is 2 times greater than the probability of the other

Question name:Question No. 25
To encode one printable character in Extended Unicode, a codeword of length
1)10 bits
2)1 byte
3)16 bits
4)4 bytes
5)10 bytes
Question name:Question No. 46
The multiple correlation coefficient can take values in the range
1)from - 1 to 0
2)from -1 to 1
3)from 0 to 100
4)from 0 to 1
5)from 0 to 0.05

ID-1 OPK-10.1.

Question name:Question No. 40
Does NOT apply to toolbar commands /Markers and numbering/
1) Level up
2)Lower level
3) Lower the level along with the sub-items
4) Merge cells
5) Move along with sub-items
Question name:Question No. 43
Toolbar commands /Bullets and numbering/ apply to
1)Suggestions
2)Paragraphs
3)Pages
4)Sections
5)Columns
Question name:Question No. 48
Does NOT apply to character-level text formatting options
1)Headset
2)Size
3) Style
4)Effects
5)Alignment

ID-2 OPK-10.2.

Question name:Question No. 1
1 byte is equal to
1)2 bits
2)4 bits
3)8 bits
4)16 bits
5)256 bit
Question name:Question No. 2
1 bit is the amount of information contained in the selection message
1)one of 2 alternatives

2)one of 8 alternatives

3)one of 2 equally probable alternatives

4)one of 8 equally probable alternatives

5)one of 16 alternatives

Question name:Question No. 18

The graphical representation of a grouped variation series by a bar chart is called

1)cycloid

2)deviant

3)histogram

4)quantile quantile

5)regression

Question name:Question No. 28

To re-write a document to another disk, in another folder or with a different name, you must select the /File/ command in the menu

1)Open

2)Save

3)Save as...

4)Create

5)Page options

Question name:Question No. 29

To place a copy of the selected block from a document to the clipboard, select the command in the /Edit/ menu

1)Cut

2)Copy

3)Insert

4)Save

5)Delete

Question name:Question No. 31

To delete the selected block from the document and move it to the clipboard, select the command in the /Edit/ menu

1)Cut

2)Copy

3)Insert

4)Save

5)Delete

Question name:Question No. 3

A service that provides access to HTML documents and navigation between these documents via hyperlinks is called

1)browser

2)web

3)proxy server

4)router

5)name server

Question name:Question No. 5

Browsers are

1) Devices that control the entire operation of the computer and its components

2) Programs that provide the user with convenient interaction with a personal computer and management of its resources

3)Programs that are constantly located in RAM during computer operation

4)Programs that control the operation of specific computer devices

5) Programs for working with Web sites on the Internet

Question name:Question No. 6

In the address of the Internet resource http://www.lib.sptu.edu/main.html the name of the web site is represented by the part

1)http://

2)lib.sptu.edu

3)www.

4)main.html

5)http://www

Question title:Stealth viruses:

Stealth viruses:

1) do not change files, but create files of the same name with the com extension, which are loaded first;

2) spread over computer networks, calculate the addresses of network computers and write their copies to these addresses

3) disguise themselves as programs or games, when launched they additionally perform the actions programmed in them (steal passwords and other confidential information)

4) are present in RAM or in programs, but it is very difficult to detect and neutralize them, since they intercept calls from the operating system to infected files and disk sectors and substitute uninfected areas of the disk in place of their body

5)automatically change over time, which makes them difficult to search, detect and develop antivirus tools

Question title: Mutant viruses are:

Mutant viruses are:

1) viruses that do not change files, but create files of the same name with the com extension, which are downloaded first;

2) spread over computer networks, calculate the addresses of network computers and write their copies to these addresses

3) disguise themselves as programs or games, when launched they additionally perform the actions programmed in them (steal passwords and other confidential information)

4) are present in RAM or in programs, but it is very difficult to detect and neutralize them, since they intercept calls from the operating system to infected files and disk sectors and substitute uninfected areas of the disk in place of their body

5)automatically change over time, which makes them difficult to search, detect and develop antivirus tools

ID-1 PC-8.1

Question name:Question No. 4

The basic indicator of the time series is

1)growth rate

2)growth rate

3)value of one percent increase

4) visibility indicator

5)absolute increase or decrease

Question name:Question No. 7

The variant that occupies the middle position in a simple variation series is called

1)amplitude

2)fashion

3)median

4)arithmetic mean

5)standard deviation

Question name:Question No. 9

The value of b in the linear regression equation y=ax+b means:

1) linear regression coefficient

2) the most probable value of the resulting characteristic at a fixed value of the factor characteristic

3) standard deviation of the resulting characteristic

4) constant component of the regression equation (y - intercept)

5) standard deviation of the linear regression coefficient

ID-2 PK-8.2

Question name:Question No. 11

A database table record may contain data

1)only one type

2)different types

3)numeric types only

4) text types only

5)any types

Question name:Question No. 17

Internet hypertext files have the extension

1)rtf

2)doc

3)htm

4)txt

5)pdf

Question name:Question No. 39

The following endings for domain addresses are geographical:

1)edu

2)us

3)net

4)com

5)gov

Evaluation criteria, grading scale for test tasks

Rating		**Description**
"excellent"	5	Completed in full – 90%-100%
"good"	4	Not fully implemented – 80%-89%
"satisfactory"	3	Completed with deviation – 70%-79%
"unsatisfactory"	2	Partially completed – 69% or less correct answers

3. Current control procedure

Ongoing monitoring of progress in the discipline is carried out in the form of: completing tasks for standard calculations, solving a situational problem, an interview on control questions, completing tasks for a colloquium, testing and defending an educational and research project.

4. Examples of assessment tools and assessment criteria for intermediate certification

4.1. Examples of security questions

ID-1 UK-1.1 ID-2 UK-1.2 ID-3 UK-1.3

1. Systematic approach to the study of medicine. The concept of a system. System properties. Examples of medical systems.
2. Medical statistics as an element of modern information systems. Plan and program of

statistical research. Ways to improve the reliability of statistical information/

3. Medical system as a control system. The principle of feedback in control systems. The place of computer science methods and tools in a medical management system.

ID-1 OPK-10.1 ID-2 OPK-10.2

4. Main types of statistical research in medicine. Rules for constructing statistical tables and diagrams.
5. Basic concepts of basic information processes: storage, transmission, processing of information.
6. Types of relative indicators (statistical coefficients), methods of their calculation and graphical presentation. The area of their practical application in medicine and in the analysis of social phenomena.
7. Transmission of information through signals. Types of signals. Signal sampling.

ID-1 PC-8.1 ID-2 PC-8.2

8. Encoding information. Alphabet. Word. Dictionary. Binary coding.
9. Algebra of logic. Elementary logical operations. Truth tables.
10. The main PC families and their distinctive features. Classic PC architecture.
11. Theoretical foundations of sample statistical studies in evidence-based medicine. The concept of a general population, sample, sample representativeness.

Evaluation criteria, assessment scale for control questions

Rating		**Description**
"excellent"	5	Knows all the educational material, understands it perfectly and has thoroughly mastered it. Gives correct, conscious and confident answers to questions (within the program). In oral answers he uses literary correct language and does not make mistakes.
"good"	4	Knows all the required educational material, understands it well and has mastered it firmly. Answers questions (within the program) without difficulty. In oral answers he uses literary language and does not make gross mistakes
"satisfactory"	3	Knows basic educational material. Answers questions (within the limits of the program) with difficulty. In oral answers, he makes mistakes when presenting the material and in constructing his speech.
"unsatisfactory"	2	Does not know most of the educational material, answers, as a rule, only to the teacher's leading questions, hesitantly. Makes frequent and serious mistakes in oral answers

4.2. Examples of a situational task:

ID-1 OPK-10.1 ID-2 OPK-10.2

1. Create and format a table according to the sample.

Build a pie chart based on data from 2010 and 2011, consisting of 2 plotting areas

Resort structure of the territory

Health resort organizations		***Number of institutions***	
		2010	**2011**
Medical and preventive institutions	sanatoriums	127	123
	sanatoriums	98	113
	therapeutic boarding houses	115	127
	resort clinics	54	56
	therapeutic beaches	32	30
	radon clinics	15	11

	mud baths	21	25
Recreational facilities	rest houses	54	59
	recreation centers	79	85
	camp sites	170	167
	boarding houses	74	72
	campings	95	103

2. Using MS Excel, create an automated system for processing data on incoming patients:

Create a table of initially admitted patients:

item no.	Last name	Name	Middle name	Date of birth	Complaints*

*depending on the version of the task received, complaints may be: acute toothache; edema; bleeding gums, etc.

Fill in the table with arbitrary data (number of patients – 15)

Create a "Knowledge Base" table like this:

Proposed treatment	Attending physician
Caries treatment, tooth extraction	Petrov A.E.
Prevention	Vasin K.L.
Pediatric dentistry	Rogov A.V.

Create a summary table like this:

item no.	Full name	Treatment	Attending physician

Rules for automatically filling the table:

- fill in your full name using the concatenation functions;
- treatment depends on the symptoms: for acute pain - treatment of caries or tooth extraction; for bleeding and swelling - prevention; for all pediatric patients, regardless of symptoms – pediatric dentistry (use the logical "IF" function);
- the selection of the attending physician is carried out automatically depending on the type of treatment (use the logical function "IF").

Build a chart based on the frequency of treatment prescribed to patients (build an additional table and use the "COUNTIF" function to calculate the frequency)

Copy the table "Initially admitted patients" and the resulting diagram into MS Word

Assessment criteria, situational task assessment scale

Rating		**Description**
"excellent"	5	The explanation of the progress of solving the problem is detailed, consistent, competent, with correct and fluent terminology; answers to additional questions are correct and clear
"good"	4	Explanation of the process of solving the problem is detailed, but not logical enough, with isolated errors in details, answers to additional questions are correct, but not clear enough
"satisfactory"	3	Explanation of the process of solving the problem is not complete enough, inconsistent, with errors, with significant difficulties and errors, answers to additional questions are not clear enough, with errors in details
"unsatisfactory"	2	The explanation of the progress of solving the problem is given incompletely, inconsistently, with gross errors, with a large number

		of errors, answers to additional questions are incorrect or missing

Evaluation criteria, final grading scale pass/fail

Rating	Description
"passed"	Demonstrates a thorough understanding of the problem. Knows the basic concepts within the framework of the issue under discussion, methods of study and their relationship with each other, practical problems and has an idea of promising directions for developing the issue under consideration
"not accepted"	Demonstrates a lack of understanding of the problem. Does not know the basic concepts, methods of study, within the framework of the issue being discussed, has no idea about the main practical problems

5. Intermediate assessment procedure

Intermediate assessment in the discipline is carried out in the form of a test. The test includes: an interview on test questions and solving a situational problem.