**Federal State Budgetary Educational Institution higher education "Dagestan State Medical University" Ministry of Health of the Russian Federation (FGBOU VO DSMU of the Ministry of Health of Russia)**

# WORKING PROGRAM OF THE DISCIPLINE
*Introduction to information technology.*
*Presentation and processing of medical information.*

Curriculum discipline index – **B1.O.15.01**
Direction of training (specialty): 31.05.01 - **General Medicine**
Level of higher education: *specialist*
Graduate Qualification: **General doctor**
Faculty: **Medical**
**Department: Biophysics, informatics and medical equipment**
Full-time form of education
Course: *1*
Semester: *1, 2*
Total Effort (in credits/hours): *4* CU/*144* hours
Lectures: *24* hours
Laboratory studies:
Practical training: *54* hours
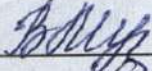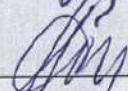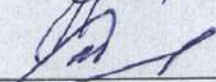Independent work: *30* hours
Form of control: *exam*

**Makhachkala, 2021**

The work program of the discipline *"Introduction to information technology. Representation and processing of medical information"* was developed in accordance with the Federal State Educational Standard of HE in the direction of training (specialty) **31.05.01 General Medicine**, approved by order of the Ministry of Education and Science of the Russian Federation No. 988 of 12.08.2020.

The work program of the academic discipline was approved at a meeting of the Department of Biophysics, Informatics and Medical Equipment 23.06.2022 Protocol № 10.

*Work program agreed:*

1. Director of the SML of the DSMU _____ (V.R. Musayeva)

2. Head of the Department of EMW and QCT _____ (A.M. Karimova)

3. Dean of the Faculty of Medicine, _____ (R.T.Savzikhanov)


**Head of the Department** _____ ( **R.M. Abdulgalimov**)


**Program developers:**

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**Reviewers:**

1. E.R. Nagiev - Doctor of Medical Sciences, Head of the Department of general and biol. Chemistry, DSMU, professor.

2. F.E. Esetov - Head of the Department of Informatics and Computer Engineering, DSPU, Associate Professor.

# I.    PURPOSE AND OBJECTIVES OF MASTERING THE EDUCATIONAL DISCIPLINE

**Purpose**: to familiarize students with the theoretical and methodological foundations of modern information technologies and the formation of the ability to use modern information technologies to solve the professional tasks of a doctor in general hygiene, in epidemiology.

**Tasks**: form a systemic understanding of the possibilities and benefits of using modern information and digital technologies in the field of professional activity; − form the ability to use information technology to solve educational and applied problems; − to form the skills of working with software tools for the effective solution of educational and applied problems.

## II. PLANNED TRAINING OUTCOMES IN THE DISCIPLINE

### Competences formed in the process of studying the discipline GEF 3++

| Code and name of the competence (or part thereof) | |
|---|---|
| **Code and name of the indicator of achievement of competence** | |
| *Universal competencies (UC)* | |
| *UC - 4.* Able to use modern communication technologies, including in a foreign language(s), for academic and professional interaction | *AID-3.* Uses modern information and communication tools and technologies. |
| **Know:** modern communication technologies, for academic and professional interaction.<br>**Be able to:** use modern information and communication tools and technologies in professional activities.<br>**Skill:** modern information and communication technologies for professional interaction. | |
| **General professional competences (GPC)** | |
| *GPC-10*. Able to understand the principles of operation of modern information technologies and use them to solve problems of professional activity | *AID-1*. Understands the principles of operation of modern information technologies (interactive mode, integration, flexibility of change processes) |
| | *AID-4*. Carries out an effective search and uses information resources for the implementation of professional activities. |
| **Know**: the principles of operation of modern information technologies and use them to solve the problems of professional activity, a general description of the processes of collecting, storing, processing and transmitting information in the field of professional activity; basic means and methods of ensuring information security when working with various sources of information.<br>**Be able to**: carry out an effective search and use information resources for the implementation of professional activities, rationally choose and use information technologies for the effective solution of tasks; analyze and evaluate sources of information, information resources in solving research and practical problems; apply methods and means of information protection.<br>**Skill**: the principles of operation of modern information technologies (interactive mode, integration, flexibility of change processes), the main technologies for information retrieval in solving problem situations; technologies for collecting, storing and processing information, taking into account the basic requirements of information security. | |

# I. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE EDUCATIONAL PROGRAM

Discipline "*Medical Informatics: Introduction to information technology. Presentation and processing of medical information*" refers to the obligatory part *B1.O.15.01* of the curriculum in the specialty *31.05.01 General Medicine*. The previous ones, on which the discipline "*Medical Informatics: Introduction to information technology. Presentation and processing of medical information*" is directly based, are the school course "*Informatics and ICT*".

## IV. VOLUME OF DISCIPLINE AND TYPES OF EDUCATIONAL WORK
### The total labor intensity of the discipline is 4 credit units.

| Type of study work | Total hours | Semesters | |
|---|---|---|---|
| | | I | II |
| **Contact work of students with the teacher** | 78 | 26 | 52 |
| **Classroom activities (total)** | 78 | 26 | 52 |
| *Including:* | | | |
| Lectures (*L*) | 24 | 8 | 16 |
| Practical studies (*PS*) | 54 | 18 | 36 |
| Laboratory studies (*LS*) | | | |
| **Independent work of the student (IWS)** | 30 | 10 | 20 |
| Type of intermediate certification | 36, exam | | 36, exam |
| **General labor intensity** | | | |
| hours | 144 | 36 | 108 |
| credit units | 4 | 1 | 3 |

## V. CONTENT OF THE WORKING PROGRAM OF THE DISCIPLINE (MODULE)
### 5.1. Sections of the discipline (module) and competencies
### that are formed during their study

| № section | Name discipline section | Section content | Controlled competency code |
|---|---|---|---|
| 1 | Fundamentals of information technology | Information, information processes and information society. Arithmetic and logical foundations of computers Representation of information in computers. Computer hardware. Computer software. | AID-3 UC-4<br><br>AID-4<br>GPC-10 |
| 2 | Databases and computer networks | Database. Computer networks. Computer security threats and the basics of anti-virus protection. | AID-3 UC-4<br><br>AID-4 GPC-10 |
| 3 | Information technologies for solving problems of professional activity | Fundamentals of algorithmization. Medical algorithmic language. Medical information systems and technologies. Automated medical and technological systems for laboratory research. Telecommunication systems in medicine. Electronic reference and legal | AID-3 UC-4<br><br>AID-4<br>GPC-10 |

| | | systems in professional activity. | |
|---|---|---|---|

## 5.2. Sections of the discipline and labor intensity by types of educational work

| № section | Name discipline section | Types of study work, hours | | | | Total hours |
|---|---|---|---|---|---|---|
| | | Classroom | | | Extracurricular | |
| | | L | LS | PW | GPC | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Fundamentals of information technology | 8 | | 18 | 10 | 36 |
| 2 | Databases and computer networks | 6 | | 16 | 8 | 30 |
| 3 | Information technologies for solving problems of professional activity | 10 | | 20 | 12 | 42 |
| **Total:** | | **24** | | **54** | **30** | **108** |

## 5.3. Thematic plan of lectures

| № section | Chapter disciplines | Topics of lectures | Number of hours per semester | |
|---|---|---|---|---|
| | | | I | II |
| 1. | *Fundamentals of information technology* | *L.1.* Information, information processes and information society. Representation of information in a PC. | 2 | |
| | | *L.2.* Arithmetic and logical bases. | 2 | |
| | | *L.3.* PC hardware and software | 2 | |
| | | *L.4-5.* Fundamentals of algorithmization. Medical algorithmic language. | 2 | 2 |
| 2. | *Databases and computer networks* | *L.6.* Database | | 2 |
| | | *L.7.* Computer networks | | 2 |
| | | *L.8.* Computer security threats and the basics of anti-virus protection | | 2 |
| 3. | *Information technologies for solving problems of professional activity* | *L.9.* Telecommunication technologies in medicine | | 2 |
| | | *L.10.* Medical information systems of general clinical direction and sanitary and epidemiological service. | | 2 |
| | | *L.11.* Automated medical and technological systems for laboratory research | | 2 |
| | | *L.12.* Electronic reference and legal systems in professional activity | | 2 |

| Total: | | | | 8 | 16 |
|---|---|---|---|---|---|

## 5.4. Thematic plan of practical classes

| № section | Section of discipline | Name of topics of practical classes | Forms of current control | Amount of hours per semester | |
|---|---|---|---|---|---|
| | | | | **I** | **II** |
| 1 | *Fundamentals of information technology* | *PS. 1.* "Information, Information Processes Information Society" | *I, PS, T* | 2 | |
| | | *PS. 2.* "Number systems" | *I, PS, T* | 2 | |
| | | *PS. 3.* "Algebra of Logic" | *I, PS, T* | 2 | |
| | | *PS. 4.* "Representation of information in a computer" | *I, PS, T* | 2 | |
| | | *PS. 5.* "Computer hardware" | *I, PS, T* | 2 | |
| | | *PS. 6.* "MS Windows 10 operating system" | *I, PS, T* | 2 | |
| | | *PS. 7.* "MS Word Processor" | *I, PS, T* | 2 | |
| | | *PS. 8.* "Spreadsheet MS Excel" | *I, PS, T* | 2 | |
| | | *PS. 9.* "Creating Presentations in MS Power Point" | *I, PS, T* | 2 | |
| 2 | *Databases and computer networks* | *PS.9.* "Creating Presentations in MS Power Point" | *I, PS, T* | | 2 |
| | | *PS.10.* "Database" | *I, PS, T* | | 4 |
| | | *PS.11.* "Local and global computer networks" | *I, PS, E* | | 2 |
| | | *PS.12*. "Computer security threats and the basics of anti-virus protection" | *I, PS, T* | | 2 |
| 3 | *Information technologies for solving problems of professional activity* | *PS.13. "Fundamentals of Algorithmization"* | *I, PS, E* | | 2 |
| | | *PS.14.* "Medical Algorithmic Language" | *I, PS, E* | | 4 |
| | | *PS.15.* "Medical information systems of general clinical direction and sanitary and epidemiological service" | *I, PS, E* | | 4 |
| | | *PS.16.* "Automated medical and technological systems of laboratory research" | *I, PS, E* | | 6 |
| | | *PS.17.* "Telecommunication technologies in medicine" | *I, PS, E* | | 6 |
| | | *PS.18.* "Electronic reference and legal systems in professional activity" | *I, PS, T* | | 4 |
| Intermediate certification | | | *exam* | | 36 |
| **Total** in the semester: | | | | 18 | 36 |

**5.5. Educational and methodological support for independent work in the discipline**

**5.5.1. Independent work of the student in the discipline**

**"Introduction to Information Technology"**

| № | Section of discipline | Name works | Labor intensity (hour) | Forms of control |
|---|---|---|---|---|
| 1. | *Fundamentals of information technology* | Preparation for classroom studies (development of educational material on lecture notes and educational literature, preparation of an essay, preparation for tests) | 10 | Interview, essay, testing, situational tasks |
| 2 | *Databases and computer networks* | Preparation for classroom studies (development of educational material on lecture notes and educational literature, preparation of an essay, preparation for tests) | 8 | Interview, essay, testing, situational tasks |
| 3 | *Information technologies for solving problems of professional activity* | Preparation for classroom studies (development of educational material on lecture notes and educational literature, preparation of an essay, preparation for tests) | 12 | Interview, essay, testing, situational tasks |
| **Total:** | | | **30** | |

**5.5.2. Topics of abstract works**

1. Computer revolution: social perspectives and consequences.
2. The path to the information society.
3. History of supercomputers.
4. Types and characteristics of modern video cards.
5. Types and characteristics of modern processors.
6. Intel and AMD - comparative characteristics of competing manufacturers of processors.
7. ATI and NVidia - comparative characteristics of competing video card manufacturers.
8. Input devices: classification, their characteristics.
9. Output devices: classification, their characteristics.
10. Computer project of the fifth generation.
11. Pocket personal computers.
12. The concept of teaching computer systems.
13. Windows and MacOS: comparative characteristics.
14. History of information technology development (text and graphics processors, spreadsheets, etc.)

15. History of development of operating systems.
16. Windows and Unix: comparative characteristics.
17. Methods of computer graphics. Computer games
18. Characteristics of pattern recognition systems.
19. Formation and development of systems based on knowledge (expert systems).
20. Artificial intelligence.
21. Modern database design systems.
22. The concept of free software.
23. Graphic editors: types, advantages, disadvantages.
24. Development of OS family Windows.
25. Modern auxiliary programs-utilities.
26. History of the Internet.
27. The history of the development of information retrieval systems.
28. History of the development of communication systems on the Internet.
29. Protection of e-mail on the Internet.
30. Internet and cybercrime.
31. Search for information on the Internet. Web indexes, Web directories.
32. www. History of creation and modernity.
33. The concept of network etiquette.
34. The main components of computer networks (servers, types of communications, network adapters, software, modems).
35. Internet technologies in everyday life.
36. Offenses in the field of information technology.
37. Protection of information on the Internet.
38. The history of computer viruses and systems to counter them.
39. History of development of cryptography.
40. Development of information security systems.
41. Antivirus programs and their main characteristics.
42. The harmful effects of the computer. Protection methods.

**5.5.3. Guidelines for students on mastering the discipline (attached) Appendix №3**

## VI. EVALUATION TOOLS FOR CURRENT CONTROL OF PROGRESS AND INTERIM CERTIFICATION ON THE RESULTS OF MASTERING THE DISCIPLINE (Appendix 1)

### 6.1. Current progress monitoring
### 6.1.1. The list of competencies indicating the stages of their formation in the process of mastering the work program of the discipline

| № section | Name of the discipline section (module) | Controlled competency code (or part of it) | Forms of control |
|---|---|---|---|
| 1 | Fundamentals of information technology | UC-4 GPC-10 | PS, T, Interview, ST, Essay |
| 2 | Databases and computer networks | UC-4 GPC-10 | PS, T, Interview, ST, Essay |
| 3 | Information technologies for solving problems of professional activity | UC-4 GPC-10 | PS, T, Interview, ST, abstract |

### 6.1.2. Examples of evaluation tools for monitoring progress

*EXAMPLES!*

For the current control of the progress of the discipline, the following evaluation tools are used:

### INTERVIEW ON CONTROL QUESTIONS
**The topic of the practical lesson № 13. "Fundamentals of Algorithmization".**
*Controlled Competency Codes: UC-4 ID-3, GPD-10 ID 1, 4.*

1. What is an algorithm? What is the origin of the term "algorithm"?
2. What sections does the modern theory of algorithms consist of?
3. Who can be the executor of the algorithm?
4. What is the task formalization?
5. What are the properties of the algorithm? What requirements must the algorithm meet?
6. What ways of writing algorithms do you know?
7. What are the disadvantages of the verbal way of writing the algorithm? What are the advantages and disadvantages of representing an algorithm in the form of a flowchart? What are "pseudocodes"?
8. What basic algorithmic constructions do you know? What is a "linear algorithm"? What is a "branching algorithm"? What determines the choice of path when branching?
9. What is a "round robin"? What is the difference between a precondition loop and a postcondition loop?
10. Write an algorithm for calculating the factorial of the number $N$ ($N!=1 \cdot 2 \cdot 3 \ldots \cdot N$). Input: $N$ is an integer whose factorial is to be calculated. Output data: factorial – factorial value of N, product of numbers from 1 to $N$, integer. Intermediate data: i is an integer variable that takes

values from 2 to *N* with a step of 1.

## Criteria for assessing the current control of progress
### (Written work on the topic of the practical lesson)

✓ "***Excellent***": The student has a deep knowledge of the educational material on the topic of the practical lesson, formulated a complete and correct answer to the questions of the topic of the lesson, in compliance with the logic of the presentation of the material, shows the assimilation of the relationship of the basic concepts used in the work. The student demonstrates knowledge of theoretical and practical material on the topic of the lesson.

✓ "***Good***": The student showed knowledge of the educational material, mastered the basic literature, was able to answer almost completely all questions. The student demonstrates knowledge of theoretical and practical material on the topic of the lesson, allowing minor inaccuracies.

✓ "***Satisfactory***": The student as a whole mastered the material of the practical lesson, answered not all control questions. The student finds it difficult to correctly assess the proposed task, gives an incomplete answer.

✓ "***Unsatisfactory***": The student has significant gaps in the knowledge of the main educational material of the practical lesson, did not fully disclose the content of the questions, could not compose a single algorithm. The student gives an incorrect assessment of the situation, incorrectly chooses an algorithm of actions. An unsatisfactory mark is given to a student who did not answer the questions on the topic of the practical lesson.

## CURRENT CONTROL OF PROGRESS – TESTS
### *Lesson topic number 5. "Computer hardware"*
### *Codes of controlled competencies: UC-4, GPC-10.*

### <u>Option 2</u>
**1. Scanners are:**
**a)** Mechanical and optical                **b)** Hand and tablet
**c)** Matrix and laser                **d)** Mechanical and automatic

**2. Which type of monitor uses an electron gun?**
**a)** In liquid crystal                **b)** Based on a cathode ray tube
**c)** Plasma panels                **d)** In OLED monitors

**3. What type of printer uses the principle of ink drop printing?**
**a)** In matrix                **b)** Inkjet                **c)** In thermosublimation                **d)** In laser

**4. A write-once optical disc is indicated**
**a)** CD-ROM                **b)** CD-RW                **c)** DVD-RW                **d)** CD-R

**5. Memory that stores data only while the PC is running is called**
**a)** Long term                **b)** semi-permanent                **c)** Permanent                **d)** Operational

**6. Which of the following memory devices are volatile?**
**a)** SRAM                **b)** RAM                **c)** ROM                **d)** OVC

**7. Which of the following memory devices are non-volatile?**
**a)** SRAM     **b)** RAM     **c)** ROM     **d)** OVC

**8. Which of the devices are input devices?**
a) Printer     b) Scanner     c) Keyboard     d) Monitor
e) Touchpad     f) Plotter     g) Trackball

**9. Which of the devices are output devices?**
**a)** Plotter     **b)** Scanner     **c)** Keyboard     **d)** Monitor     **e)** Digitizer     **f)** Printer

**10. What is the main fundamental difference between storing information on external information media and storing in RAM**
**a)** In a different amount of stored information
**b)** In different speed of access to stored information
**c)** In the ability to set a ban on recording information
**d)** In the possibility of saving information after turning off the computer

**11. Basic computer configuration includes:**
**a)** Processor, internal memory, external memory, input and output devices
**b)** Arithmetic logic unit, control unit, monitor
**c)** Microprocessor, ROM, RAM, ROM, keyboard, monitor, printer, mouse
**d)** System unit, monitor, keyboard, mouse

**12. Permanent storage device is used for:**
**a)** Storing the user program during operation
**b)** Storage of permanently used programs
**c)** Storage of programs for initial booting of the computer and testing of its components
**d)** Recordings of high-value application programs
**e)** Permanent storage of especially valuable documents

**13. The main parameters of microprocessors are:**
**a)** Bit depth     **b)** Clock frequency     **c)** Cache size
**d)** USB memory     **e)** Coprocessor     **f)** Performance

**14. A non-volatile read-only memory device that contains programs that implement input-output functions.**
a) POST     b) BIOS     c) CMOS     d) MS DOS     e) RAM

**15. In what units is the resolution of the scanner and printer measured?**
**a)** dpi     **b)** spi     **c)** ppi     **d)** lpi

**Criteria for assessing the current control of progress (testing):**
- "Excellent": 100-86%
- **"Good"** : 85-70%
- "Satisfactory": 69-55%
- "Unsatisfactory": <55%

**PRACTICAL SKILLS (MS Word text processor)**
*Theme of the laboratory lesson № 7. "Text processor MS Word"*
*Codes of controlled competencies: GPC-10.*
**Task №1.** Create a medical opinion form according to the model:

_____     Form code _____

Address _____     Institution code _____

_____

_____     Medical documentation

License _____     Form № 003

Approved by order Ministry of Health of the

Russian Federation

from «___» _____ 20___ г. №_____

Medical conclusion

series 45 № 0000325

on the presence (absence) of vehicle drivers (candidates for vehicle drivers) of major contraindications, alleged or significant restrictions on driving vehicles

1. Full name _____

_____

2. Date of birth:  day_____month_____year_____

3. Place of registration:

_____

the subject of the Russian Federation

_____     district     _____     city

_____     locality _____

street _____house_____ apartment

4. Date of issue of the medical report: day_____month_____year_____
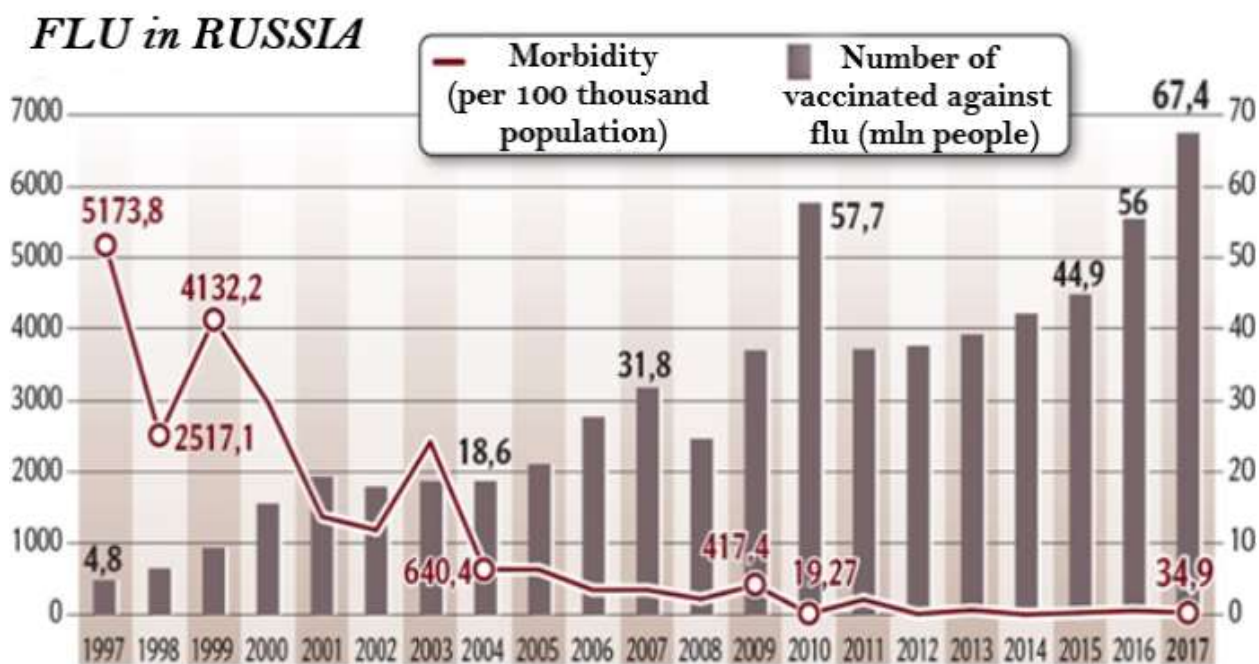
5. Medical conclusion:

The absence (presence) of medical contraindications, medical indications or medical restrictions to driving vehicles was revealed (underline as necessary).

«_____»  M.M. Magomedov

signature

P.P.

**Task №2.** Based on the data presented in the chart, create a table and the same combination chart.



**Criteria for assessing the current progress control (Text processor MS Word):**

✓ **"Unsatisfactory":** The student does not have practical skills in working with the word processor MS Word.

✓ **"Satisfactory":** The student has basic skills, but makes mistakes and inaccuracies in the formatting of text and paragraphs. The student is basically able to independently fulfill the main provisions in the studied material. The student is able to master the skill of using some of the tools of the MS Word text processor.

✓ **"Good":** The student has knowledge of all the studied program material, presents the material consistently, makes minor mistakes and shortcomings when reproducing the studied material. The student does not have sufficient skills in MS Word, is oriented correctly, but works slowly.

✓ **"Excellent**": The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the studied material. The student demonstrates a deep and complete knowledge of the rules for applying the basic functions of MS Word by creating and editing documents of two to three pages for various purposes and situations. Examples include reports, multi-column newsletters, questionnaires, and professionally designed business letters.

**ESS**

**AY**

*Chapter № 1. "Fundamentals of Information Technology".*
*Codes of controlled competencies: UC-4, GPC-10.*

*Topics of abstracts***:**

1. Computer revolution: social perspectives and consequences.

2. The path to the information society.

3. History of supercomputers.

4. Types and characteristics of modern video cards.

5. Types and characteristics of modern processors.

6. Intel and AMD - comparative characteristics of competing manufacturers of processors.

7. ATI and NVidia - comparative characteristics of competing video card manufacturers.

8. Input devices: classification, their characteristics.

9. Output devices: classification, their characteristics.

10. Computer project of the fifth generation.

11. Pocket personal computers.

12. The concept of teaching computer systems.

13. Windows and MacOS: comparative characteristics.

14. History of information technology development (text and graphics processors, spreadsheets, etc.)

15. History of development of operating systems.

16. Windows and Unix: comparative characteristics.

17. Methods of computer graphics. Computer games

18. Characteristics of pattern recognition systems.

19. Formation and development of systems based on knowledge (expert systems).

20. Modern database design systems

### Criteria for evaluating current control (essay):

- Novelty of the abstracted text: max. – 20 points;
- The degree of disclosure of the essence of the problem: max. – 30 points;
- Validity of the choice of sources: max. – 20 points;
- Compliance with design requirements: max. – 15 points;
- Literacy: max. - 15 points.

### Abstract evaluation:

The abstract is evaluated on a 100-point scale, the points are converted into academic performance assessments as follows (points are taken into account in the process of the current assessment of knowledge of the program material):

- ✓ 86 – 100 points - "excellent";
- ✓ 70 – 85 points - "good";
- ✓ 55 – 69 points - "satisfactory";
- ✓ less than 55 points - "unsatisfactory".

**Testing - in writing Section**
**№ 2. "Database. Computer network"**
*Codes of controlled competencies: UK-4, GPC-10.*

1. What are database management systems used for?
a. for storing large arrays of numerical data and their automated processing;
b. for storage and automated processing of large data arrays with a complex structure of links and relationships;
c. for automated transmission over the Internet of large arrays of medical data;
d. to create publishing systems.

2. List the most common DBMS versions
a. Microsoft Word, Word Pad, dBase IV, FoxPro;
b. Power Point, Word Pad, Clipper-5;
c. dBase IV, FoxPro, Clipper-5, Access;
d. Access, Microsoft Word, Word Pad.

3. What command is used to create the database file structure?
a. structure;     b. Width;     + c. create;     d. decimal.

4. To save the database on disk, use the key combination:
+a. Ctrl-W;     b. Alt-W;     c. Ctrl-Enter;     d. Shift - Enter.

5. What command is used to add new records to the database file?
a. use;     +b. append;     c. report;     d. Structure.

6. Marking records for deletion in the editing window is carried out by pressing the key combination:
a. Ctrl - End;     b. Ctrl-W;     + c. Ctrl-T;     d. Ctrl - I.

7. How is the opening of the editing window in full screen?
a. By pressing the keys Ctrl-W;     b. By pressing the Ctrl-Page Up keys;
+ c. By pressing the keys Ctrl-F10;     d. By pressing the Ctrl-End keys.

8. How are individual fields removed?

a. by selecting the field name and then pressing the key combination Ctrl+I;

+b. by selecting the field name and then pressing the key combination Ctrl+D;

c. by selecting the field name and then pressing the key combination Ctrl+T;

d. by selecting the field name and then pressing the key combination Ctrl+F10.

9. Viewing the database structure is carried out by the command:

a. list display structure;                 +b. display structure;

c. display record;                          d. list off display structure.

10. Select a command to display the fifth record of the database file:

a. list off display record 5;          b. list display record 5;

+ c. display record 5;                  d. display report 5;

e. list off display record 5.

11. How is the database displayed on the screen?

 a. list database;          b. list off database;          + c. list off;

 d. list display database;                e. list off display database.

12. Correct statement:

a. the FoxPro package has an interpreter that allows you to generate exe-files of finished programs;

b. the FoxPro package has an interpreter that allows you to generate com-files of finished programs;

+ c. the FoxPro package has a compiler that allows you to generate exe-files of finished programs;

d. The FoxPro package has a compiler that allows you to generate bat-files of finished programs.

13. FoxPro database field type can be:

a. Fpt, False, numeric, memo, character, date;

b. True, structure, numeric, character, date, memo;

+ c. Character, numeric, logical, date, memo;

d. Character, numeric, date, memo, true.

14. How long are numeric fields?

a. up to 254 bytes;                +b. up to 20 bytes;

c. up to 16 bytes;                 d. up to 8 bytes.

15. Databases containing a large number of fields are more conveniently

presented in the format:

a. Browse;     b. append;     +c. change;     d. Edit.


## Testing evaluation criteria

The test is evaluated on a 100-point scale, the points are converted into academic grades as follows:

✓ 86 - 100 points - "***excellent***";

✓ 70 – 85 points - "***good***";

✓ 55 – 69 points - "***satisfactory***";

✓ less than 55 points - "***unsatisfactory***".

### SITUATIONAL TASKS BY SECTIONS OF THE DISCIPLINE
### Section No. 3. "Information technologies for solving problems of professional activity" *Codes of controlled competencies: UC-4, GPC-10.*


**TASK 1**. In the city of N. in 2019, 1,100 cases of dysentery, 1,300 of measles, 500 of scarlet fever, 150 of whooping cough, 480 of infectious hepatitis, 10 of diphtheria and 1,790 of other infections were registered. Using MS Excel functions, calculate the indicator of the structure of infectious morbidity.


**TASK 2**. When analyzing the incidence of children in the children's clinic in section № 2, the following data were obtained: total children - 740. Registered diseases: 975 including: dysentery 18 influenza 405 pneumonia 19 acute respiratory infections 278 others. fell ill 255. Using the functions of MS Excel to determine the structure and frequency of morbidity in children, including by nosological forms.


**TASK 3**. In city N: Population - 500,000 people; born - 4400 people; died - 7000 people, children who died before 1 year - 96 people; in maternity hospitals of the city: born alive - 4400 people; Among the children who died under the age of 1 year, there were 40 people who died from diseases of the newborn; from diseases of the respiratory system - 30 people; from diseases of the gastrointestinal tract - 16 people; from congenital anomalies - 6 people; from other reasons - 4 people.

Based on the presented data, using MS Excel functions, calculate and evaluate the following demographic indicators: birth rate, death rate, natural increase, infant mortality, indicator of the structure of causes of infant mortality (separately for each cause).


**Criteria for assessing the current monitoring of progress (situational tasks):**

✓     **"Excellent"**: The answer to the question of the problem is given correctly. The explanation of the course of its solution is detailed, consistent, competent, with

theoretical justifications (including from the lecture course), with the necessary schematic images, the answers to the questions are correct, clear.

✓ **"Good"**: The answer to the question of the problem is given correctly. The explanation of the course of its solution is detailed, but not logical enough, with single errors in details, some difficulties in theoretical justification (including from lecture material), in schematic images, with single errors in the solution; the answers to the questions are correct, but not clear enough.

✓ **"Satisfactory"**: The answer to the question of the task is given correctly. The explanation of the course of its solution is not complete enough, inconsistent, with errors, weak theoretical justification (including lecture material), with significant difficulties and errors in schematic images, answers to questions are not clear enough, with errors in details.

✓ **"Unsatisfactory"**: The answer to the question of the task is given incorrectly. The explanation of the course of its solution is given incomplete, inconsistent, with gross errors, without theoretical justification (including lecture material); the answers to the questions are incorrect (or missing).

## 6.2. Intermediate certification based on the results of mastering the discipline

### 6.2.1. The form of intermediate certification is an exam. Semester 2

### 6.2.2. The procedure for conducting intermediate certification.
The exam is conducted orally in the form of an interview on tickets.

### 6.2.3. Sample questions to prepare for the exam.
1. Basic concepts of computer science. Information and data. Types of information. Information properties
2. Information processes. The role of information in the development of society. Information potential of society.
3. History of the development of computer technology.
4. The device and the main characteristics of the motherboard.
5. Central processor, organization and main characteristics of computer memory.
6. Devices forming external memory. Input and output devices.
7. Classification of computers and computing systems.
8. Representation of numbers in a computer.
9. Coding of signs (symbols).
10. Coding of graphic information.
11. Definition of a color model. Color model RGB, CMYK, LAB, HSB.
12. Coding of sound information.

13. Classification of software according to the degree of interaction with the PC hardware.

14. Classification of software by type of licensing.

15. Classification of software by destination platform.

16. Classification of software according to the way of interaction with the user.

17. Classification of software in relation to the network.

18. Classification of software by installation method.

19. Classification of software for development purposes.

20. Classification of software by hardware platform.

21. Classification of software according to the degree of danger.

22. The composition of the system software.

23. Representation of the structure of the operating system.

24. Classification of operating systems.

25. The structure of the Windows file system.

26. Text processing systems.

27. Basic elements and features of Excel spreadsheet.

28. Types of number systems. The base of the positional number system. Translation from one number system to another. Arithmetic operations in SS.

29. Basic concepts of propositional algebra, operations on logical propositions and the compilation of logical formulas

30. Basic laws of the algebra of logic

31. Drawing up a truth table for a logical formula

32. Construction of switching circuits based on the algebra of logic

33. Local networks and LAN components

34. Network terms

35. Wireless networks

36. Classification of Internet services by type of appeal: interactive services, direct communication services, delayed communication services.

37. Search for information on the Internet.

38. Stages of solving problems using a computer.

39. Properties of algorithms. Forms of writing algorithms.

40. Basic algorithmic structures.

## 6.2.4. Ticket example.

FSBEI HE DSMU of the Ministry of Health of Russia
Department of Biophysics, Informatics and Medical Equipment
Specialty (direction) General Medicine Discipline.
Introduction to information technology.
Presentation and processing of medical information.

QUESTIONS FOR THE EXAM
Ticket № 1

Approved at a meeting of the department, minutes from «31» august 2021  № 1

1. What is information technology. Object, purpose, properties and methods of information technology.
2. The concept of information. Types of medical information.
3. Entering, editing, data formatting and calculations in MS Excel. Automation of data entry. Using complex formulas and standard functions.

*Department head:*
AbdulgalimovR.M,
doc.pedag.sciences, associate professor  _____ /_____
*signature*

*Compilers:*
AbdulgalimovR.M,
doc.pedag.sciences, associate professor  _____ /_____
*signature*

Kurbanova A.M., associate professor
of the Department of Biophysics,
cand.ph.math. sciences  _____ /_____
*signature*

### 6.2.5. The system for evaluating the results of mastering the discipline (module), a description of the assessment scales, grading.

The assessment system includes an exam.

When conducting an intermediate certification in the form of an exam, an assessment scale is used (according to levels - to know, be able, skill): "***unsatisfactory***", "***satisfactory***", "***good***", "***excellent***".

| *Evaluation criteria* | *Evaluation scale* | | | |
|---|---|---|---|---|
| | *"unsatisfactory" (minimum not reached)* | *"satisfactory" (minimum level)* | *"good" (average level)* | *"excellent" (high level)* |
| **UC-4.   Able to apply modern communication technologies, including in a foreign language(s), for academic and professional interaction** | | | | |
| **know** | The student is not able to independently identify the main provisions in the studied material of the discipline. Does not know modern information and communication means and technologies in professional activities; fundamentals of information security of professional activity. | The student has mastered the main content of the material of the discipline, but has gaps in the assimilation of the material that do not prevent further assimilation of the educational material. Has unsystematized knowledge of modern information and communication tools and technologies in professional activities; basics of information security of professional activity. | The student is able to independently highlight the main provisions in the studied material. Knows the basics of modern information and communication nyh means and technologies in professional activity; information security of professional activity. | The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas worked out. material of the discipline. Knows the general characteristics of the processes of collecting, storing, processing and transmitting information in the field of professional activity . Demonstrates a deep knowledge and understanding of the principles of modern information technology. |
| **Be able to** | The student does not know how to use modern information and communication tools and technologies in professional | The student experiences difficulties in highlighting the main content of the material of the | The student is able to independently identify the main provisions in the studied material. The student is able to use | The student is able to consistently highlight the main provisions in the studied material. The student is able to independently give a |

| | | | | |
|---|---|---|---|---|
| | activities; observe the information security of professional activities. | discipline. The student inconsistently and unsystematically presents the educational material. The student finds it difficult to use information technology to effectively solve the tasks. | information technology to effectively solve problems. The student is able to analyze and evaluate sources of information, information resources in solving research and practical problems. | brief description of the main ideas of the studied material of the discipline. The student is able to apply methods and means of information protection |
| **skill** | The student does not have the skill to use modern information and communication tools and technologies in professional activities; compliance with the information security of professional activities. | The student has basic skills in highlighting the main content of the material of the discipline. The student is generally able to independently present the educational material. The student basically has the skill of using information retrieval technologies in solving problem situations. | The student has knowledge of everything studied program material, he presents the material consistently, but makes minor mistakes and shortcomings when reproducing the studied material. The student is able to independently identify the main provisions in the studied material of the discipline. | The student independently selects the main position in the studied material and is able to give a brief description of the main ideas of the studied material. The student shows a deep and complete knowledge of the entire volume of the studied discipline in terms of information search when solving problem situations. The student owns the technologies for collecting, storing and processing information, taking into account the basic requirements of information security. |

**GPC-10.** Able to understand the principles of operation of modern information technologies and use them to solve problems of professional activity

| | | | | |
|---|---|---|---|---|
| **know** | The student is not able to independently identify the main provisions in the studied material of the discipline. Does not know or understand much or most of current information technology research. | The student is able to independently highlight the main provisions in the studied material. Shows knowledge of all studied program material. Gives a complete and correct answer based on the studied theoretical and practical materials on modern research in the field of information technology, minor | The student is able to independently highlight the main provisions in the studied material. Knows the basics of modern information technologies and information security in professional activities. | The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the studied material of the discipline Knows the general characteristics of IT in the field of professional activity. Demonstrates a deep knowledge and understanding of the |

| | | | | |
|---|---|---|---|---|
| | | errors and shortcomings in the reproduction of the studied material, gives complete definitions of concepts. | | principles of modern information technology. |
| **Be able to** | The student does not know how to use modern information resources and artificial intelligence systems to carry out professional activities | The student is able to independently highlight the main provisions in the studied material; on the basis of facts and examples, generalize, draw conclusions, establish intra-subject relationships. | The student is able to use the acquired knowledge of modern information resources for the implementation of professional activities. | The student is able to consistently highlight the main provisions in the studied material. The student is able to independently give a brief description of the main ideas of the studied material. |
| **skill** | The student does not have practical skills in working with information databases, including the Unified State Information System in the field of healthcare | The student owns the knowledge of all the studied program material, presents the material consistently, makes minor mistakes and shortcomings when reproducing the studied material, which do not affect the essence of the material being presented. | The student has sufficient skills in working with information databases, including the Unified State Health Information System and specialized software | The student independently selects the main position in the studied material and is able to give a brief description of the main ideas of the studied material. |

# VII. EDUCATIONAL-METHODOLOGICAL AND INFORMATION SUPPORT OF THE EDUCATIONAL DISCIPLINE

## 7.1.  Main literature

**Printed sources:**

| № | Name | Number of copies in library |
|---|---|---|
| **1** | | |
| | | |

## Electronic editions:

| № | Editions |
|---|---|
| **1** | |
| | |

## 7.2. Additional literature

### Printed sources:

| № | Name | Number of copies in library |
|---|---|---|
| **1** | Informatics. Practical course. Truzhenikova S.E., Atlukhanova L.B., Magomedov M.A, Azizkhanova A.E., Magomedova M.A. ИПЦ ДГМУ, Махачкала 2019. | 60 |
| | | |

## Electronic editions:

| № | Name of publication |
|---|---|
| **1** | |
| | |

## 7.3. Resources of the information and telecommunications network "Internet"

| № | Resource name | Website address |
|---|---|---|
| 1. | PubMed MEDLINE | http://www.pubmed.com |
| 2. | Google scholar | http://scholar.google.com |
| 3. | Scirus | http://www.scirus.com/srapp |
| 4. | Medical News | info@univadis.ru |
| 5. | Health issues. About WHO | http://www.who.int/en/ |
| 6. | Ministry of Education and Science of the Russian Federation | http://минобрнауки.рф |
| 7. | Ministry of Health of the Russian Federation | http://www.rosminzdrav.ru |
| 8. | Ministry of Health of the Republic of Dagestan | http://minzdravrd.ru |
| 9. | Scientific Electronic Library CyberLeninka | http://cyberleninka.ru |
| 10. | Electronic scientific library | https://elibrary.ru/defaultx.asp |
| 11. | Federal Electronic Medical Library (FEMB) | http://feml.scsml.rssi.ru |
| 12 | Univadis®: an international information and educational portal that helps doctors around the world stay at the forefront of their specialties. | http://www.medlinks.ru/ |
| 13. | Medical search engine | http://www.medinfo.ru/ |
| 14. | Faculty of Fundamental Medicine, Lomonosov Moscow State University M. V. Lomonosov (publications). | http://www.fbm.msu.ru/sci/publications/ |
| 15. | Reference book of medicines. | http://www.rlnet.ru/ |
| 16. | RFBR electronic library. | http://www.rfbr.ru/ |
| 17 | State Central Scientific Medical Library | http://www.scsml.ru// |
| 18 | Недуг.ру (medical information service) | http://www.nedug.ru/ |
| 19 | Libraries on the Internet. | http://guide.aonb.ru/libraries1.htm |
| 20 | Science and education on the Internet. | http://guide.aonb.ru/nauka.htm |
| 21 | Electronic library of textbooks. | http://studentam.net |
| 22 | Library. | www.MedBook.net.ru |
| 23 | Electronic medical books. | http://www.med.book.net.ru/21shtm |
| 24 | Portal textbooks - free RF. | http://учебникибесплатно.рф/http://sci-book.com/ |

## 7.4. Information Technology

When studying the discipline, a common package of documents and Internet materials is used, which provide ample opportunities for improving university training in physics and mathematics in order to master the skills of educational activities. The standard features of most programs are the implementation of the didactic principle of visibility in teaching, their use enables students to apply various methods to solve an educational problem. Work with educational literature is considered as a type of educational work in the discipline "Medical Informatics. Introduction to information technologies. Presentation and processing of medical information" and is performed within the hours allotted for its study (in the IWS section). Each student is provided with access to the library funds of the university and the department. Guidelines for students have been developed for each section of the academic discipline.

The teaching methods using information technology, used both in lectures and in practical classes in Medical Informatics, include:
- computer testing;
- demonstration of multimedia materials;
- a list of encyclopedic sites.
- operating system MICROSOFT Windows 10 Pro
- Application packages Microsoft Office Professional Plus 2013 (as part of Microsoft Word 2013, Microsoft Excel 2013, Microsoft Power Point 2013).
- Microsoft Office Standard 2016 (as part of Microsoft Word 2016, Microsoft Excel 2016, Microsoft Power Point 2016).
- Antivirus software
- Kaspersky Security 10 Windows.

### *List of licensed software:*

1. **Electronic Information and Educational Environment (EIOS) of DSMU**. URL: https://eos-dgmu.ru   Access mode - by login and password.
2. **Student advisor:** electronic library system. URL: http://www.studentlibrary.ru Access mode - by login and password.
3. **Physician's consultant:** electronic library system. URL: http://www.rosmedlib.ru Access mode - by login and password.
4. **Federal Electronic Medical Library (FEMB).** URL: http://feml.scsml.rssi.ru. Access mode - by login and password.
5. **Scientific electronic library eLibrary.** URL: https://www.elibrary.ru/defaultx.asp. Access mode - by login and password.
6. **Medical reference and information system.** URL: http://www.medinfo.ru . Access mode - by login and password.
7. **Scientific electronic libraryKiberLeninka.**URL: http://www.cyberleninka.ru . Access mode - by login and password.
8. **RFBR electronic library.** URL: http://www.rfbr.ru/ . Access mode - by login and password.
9. **All-Russian educational Internet program for doctors**. URL: http://www.internist.ru/.  Access mode - by login and password.

# VIII. LOGISTICS

| № | Type of room with a number (classroom, laboratory, computer lab, etc.) indicating the address (location) of the building, clinical base, building, structure, room, area of the room, its purpose (for independent work, for conducting practical classes, monitoring, intermediate assessment, e-learning, lectures, etc.) | Equipment identification |
|---|---|---|
| | **For practical training** | |
| | №3 - 42.25 m2 (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 16 pcs. |
| | №4 – - 42.25 m2 (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 16 pcs. |
| | №5 – 50 m$^2$ (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 20 pcs. |
| | №7 – 39 m$^2$ (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 16 pcs. |
| | №8 – 40 m$^2$ (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 19 pcs. |
| | №9 – 40 m$^2$ (Imam Shamil street, 44, 3rd floor.) | Personal computers with Windows 10 and MS Office 2016 - 19 pcs. |
| | Assistant room – 19,5 m$^2$ (Imam Shamil street, 44, 3rd floor.) | |
| | **For lecture classes** | |
| | Hall №1 – 270 m$^2$ (Imam Shamil street, 44, 1st floor.) | Electronic presentation. Samsung laptop; Projector Epson EB-X02; Canon MF231; |
| | Hall №2 – 270 m$^2$ (Imam Shamil street, 44, 1st floor.) | Electronic presentation. Samsung laptop; Projector Epson EB-X02; Canon MF231; |
| | Hall №3 – 270 m$^2$ (Imam Shamil street, 44, 1st floor.) | Electronic presentation. Samsung laptop; Projector Epson EB-X02; Canon MF231; |

# IX. METHODOLOGICAL SUPPORT OF THE DISCIPLINE

The methodological support of the discipline is developed in the form of a separate set of documents: "Methodical recommendations for lectures", "Methodical recommendations for practical exercises", "Methodological recommendations for the student" as an appendix to the work program of the discipline (module)

# X. FEATURES OF THE ORGANIZATION OF EDUCATION ON THE DISCIPLINE FOR THE DISABLED AND PERSONS WITH LIMITED HEALTH OPPORTUNITIES

## 10.1. Education of disabled people and persons with disabilities

If necessary, it is carried out by the department on the basis of an adapted work program using special teaching methods and didactic materials, compiled taking into account the characteristics of the psychophysical development, individual capabilities and health status of such students (student).

## 10.2. In order to master the curriculum of the discipline for disabled people and persons with disabilities health department provides:

1) for the disabled and people with visual impairments:

• placement in accessible places for students who are blind or visually impaired, and in an adapted form of reference information about the schedule of training sessions;

• the presence of an assistant providing the student with the necessary assistance;

• release of alternative formats for methodological materials (large print or audio files);

2) for the disabled and people with hearing disabilities:

• appropriate sound means of reproduction of information;

3) for disabled people and persons with disabilities who have disorders of the musculoskeletal system:

• the possibility of unhindered access of students to classrooms, toilets and other premises of the department. In case of impossibility of unhindered access to the department, organize the educational process in a specially equipped center for individual and collective use of special technical training aids for the disabled and persons with disabilities (A.Aliyev street 1, biological building, 1st floor).

**10.3. Education of students with disabilities** can be organized both jointly with other students, and in separate groups.

**10.4. The list of educational and methodological support for independent work of students in the discipline.**

Educational and methodological materials for independent work of students from among the disabled and persons with disabilities are provided in forms adapted to the limitations of their health and perception of information:

| *Categories of students* | *Forms* |
|---|---|
| hearing loss | - in printed form;<br>- in the form of an electronic document; |
| visually impaired | - in printed form in enlarged type;<br>- in the form of an electronic document;<br>- in the form of an audio file; |
| With a violation of the musculoskeletal system | - printed form;<br>- in the form of an electronic document; |

This list can be specified depending on the contingent of students.

**10.5. Fund of assessment tools for conducting intermediate certification of students in the discipline.**

**10.5.1.** List of funds for evaluation funds correlated with the planned results of the development of the educational program.

**For students with disabilities**

| *Categories of students* | *Types of evaluation tools* | *Forms of control and evaluation of learning outcomes* |
|---|---|---|
| hearing loss | text | predominantly written review |
| visually impaired | interview | predominantly oral examination (individually) |

| With a violation of the musculoskeletal system | solving remote tests, control questions | organization of control in the EIEE DSMU, written verification |
|---|---|---|

Students belonging to the category of disabled people and persons with disabilities are given more time to prepare answers for the test, they are allowed to prepare for the test using distance learning technologies.

10.5.2. Methodological materials that define the procedures for assessing knowledge, skills and (or) experience of activity, characterizing the stages of the formation of competencies.

When carrying out the procedure for evaluating the learning outcomes of people with disabilities and persons with disabilities, the use of technical means necessary for them in connection with their individual characteristics is envisaged.

The procedure for evaluating the learning outcomes of people with disabilities and people with disabilities in the discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

For persons with visual impairments:
- in printed form in enlarged type;
- in the form of an electronic document;
- in the form of an audio file.

For people with hearing impairments:
- in printed form;
- in the form of an electronic document.

For people with musculoskeletal disorders:
- in printed form;
- in the form of an electronic document;
- in the form of an audio file.

This list can be specified depending on the contingent of students.

When carrying out the procedure for evaluating the learning outcomes of people with disabilities and persons with disabilities in a discipline (module), the following additional requirements are met, depending on the individual characteristics of students:

1. instructions on the procedure for conducting the assessment procedure are provided in an accessible form (orally, in writing, orally using the services of a

sign language interpreter);

    2. an accessible form for providing assignments of assessment tools (in printed form, in printed form in an enlarged font, in the form of an electronic document, assignments are read out by an assistant, assignments are provided using sign language translation);

    3. an accessible form of providing answers to tasks (in writing on paper, a set of answers on a computer, using the services of an assistant, orally).

If necessary, for students with disabilities and the disabled, the procedure for evaluating learning outcomes in a discipline (module) can be carried out in several stages. The procedure for evaluating the learning outcomes of people with disabilities and persons with disabilities is allowed using distance learning technologies.

## 10.6. The list of basic and additional educational literature necessary for the development of the discipline.

For mastering the discipline, disabled people and persons with disabilities are provided with basic and additional educational literature in the form of an electronic document in the library fund and / or in electronic library systems. Also, special textbooks and teaching aids, other educational literature and special technical training aids for collective and individual use, as well as the services of sign language and sign language interpreters are provided free of charge.

## 10.7. Guidelines for students on mastering the discipline

Individual work is of great importance in mastering the discipline by disabled people and persons with disabilities. Individual work means two forms of interaction with a teacher: individual educational work (consultations), i.e. additional explanation of the educational material and in-depth study of the material with those students who are interested in this, and individual educational work. Individual consultations on the subject are an important factor contributing to the individualization of education and the establishment of educational contact between the teacher and the student with a disability or a student with disabilities.

## 10.8. Description of the material and technical base necessary for the implementation of the educational process in the discipline

Mastering the discipline by disabled people and persons with disabilities is

carried out using general and special-purpose training tools:

- lecture audience - multimedia equipment, mobile radio class (for students with hearing impairments); power supplies for individual technical means;

- classroom for practical classes (seminars), multimedia equipment, mobile radio class (for students with hearing impairments);

- classroom for independent work - standard workstations with personal computers; workplace with a personal computer, screen reader, screen magnifier and braille display for visually impaired students.

In each classroom where people with disabilities and people with disabilities study, an appropriate number of places for students should be provided, taking into account their health limitations.

## XI. CHANGES LIST

| *List of additions and changes made to the work program of the discipline* | *WP updated at the meeting of the department* | | |
|---|---|---|---|
| | *Date* | *Number of minutes of the meeting of the department* | *Signature of the head of the department* |
| | | | |