MINISTRY OF HIGHER AND SECONDARY SPECIALIZED EDUCATION OF THE REPUBLIC OF UZBEKISTAN
MINISTRY OF HEALTH
TERMEZ BRANCH OF
TASHKENT MEDICAL ACADEMY
DEPARTMENT OF SOCIAL AND HUMANITARIAN SCIENCES

« CONFIRMED »
Deputy director for educational affairs
_____ Y.B.Gulyamov
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MODULAR PROGRAM OF EDUCATIONAL DISCIPLINE

INFORMATION TECHNOLOGIES IN MEDICINE

(SYLLABUS)

1st COURSE

Field of knowledge:: **900000** - Health care and social security

Field of Education: **910000** - Health care

Direction of Education: **60910200** – General medicine

Termez – 2022

The working curriculum of the module is approved by the Tashkent Medical Academy order No. 246 dated 05/08/2022 (Appendix 1 of the order) "Information technologies in medicine". Prepared on the basis of the "General genetics" module program.

Compiler:

M.I.Bazarbaev- head of the Department of "Biomedical Engineering, computer science and Biophysics" at the Tashkent Medical Academy

N.U.Abdullayeva assistent of the Department of "Biomedical Engineering and computer science and Biophysics " at the Tashkent Medical Academy

Reviewers

Internal reviewer:

K.X.Axmedov - Head of the department of normal physiology, pathological physiology, pharmacology and clinical pharmacology

External reviewer:

D.A. Qarshiyev - head of the medical biological physics, informatics and information technologies at Tashkent Medical Pediatric institute.

The working module program "Information technologies in medicine" was reviewed by the TB TMA Department of social and humanitarian sciences and recommended to the branch council. (Declaration No. ___ of "___" ____ of 2022.)

Module was discussed and approved by the branch council. (Declaration No. 5 of "12" 27 of 2022.)

Head of the Department **N.N.Tursunov**

Dean of the Faculty: **J.A.Mustanov**

Head of the educational-methodical Department **Z.U.Berdiyeva**

Module code: TAT1204	Academic year 2022-2023	Semester 1	Credits 5
Module type Mandatory	Language of education English		Class hours per week 4

	Module name	Auditory lessons (hours)	Independent Classes (hours)	Total (hours)
1.	Information technologies in medicine	75	75	150

I. Module content

The purpose of training – The information technology module in medicine today plays a special role in solving medical problems, as well as medical and scientific-practical activities, training personnel who can use information technology. Bachelors must be able to process, analyze, automate work processes and make the right decisions based on medical and biological information obtained using modern computer technologies. In particular, it is necessary to know the methods of mathematical modeling, work with modern computer technologies on the Internet. Knowledge of the importance and trends in the development of information technology requires the ability to effectively use technical, software and network resources.

Purpose of the module - Use toget theoretical and practical knowledge in the field of using computer technologies in medicine, acquire modern theoretical knowledge about physical and mathematical models used in medicine, be able to correctly analyze medical statistics, determine ways to prevent or treat diseases based on the results of analysis, have basic practical skills in using information technology, working on the Internet, searching and using information, features of the medical information system, databases should know the basics of expert systems and information security.

II. Basic theoretical part (lectures)

1. Informatization of the healthcare system of Uzbekistan.

№	Theme of the lecture	hours

1	**Informatization of the healthcare system in Uzbekistan.** Information technologies in the automation of workplaces in medicine and solving medical problems. Fundamentals of information technology. Understanding of information. Types of information. Technical safety. Improving the media literacy system in Uzbekistan.	2
2	**Fundamentals of Algorithmization of Medical Problems.** Algorithm expressions and its types. Algorithmization of linear medical processes. Algorithmization of branching and repetitive medical processes. Information and communication technologies in solving medical problems. Software.	2
3	**Formalization of medical processes (clearance).** Text information processing technology. Using the wide range of features of the Microsoft Word text editor. Tabular and graphical information processing technology.	2
4	**Digital data processing technology.** Database management systems. Microsoft Excel software. Computer analysis of medical data. Using the rich features of Microsoft Access. Using the information system "Electronic Polyclinic" - (medical registrar, staff, doctors, and laboratory).	2
5	**Fundamentals of biostatistics and biometrics.** Statistical processing and evaluation of the results of a biomedical experiment using the spreadsheet editor Microsoft Excel. Use of the information system "Patient" - (for employees of institutions involved in the treatment of patients infected with Covid-19).	2
6	**Computer networks. Internet networks, their organization.** Internet search engines. Use of social sites. Electronic and distance education in medicine. Website creation software.	2
7	**Neural networks in medicine. Telecommunication systems. Telemedicine.** Setting up secure communication channels (vpn connection), their use and work in the mail system (Outlook). Use of the information system "Electronic Document Management" (office, management, managers). Network security.	2
		14

THEME OF THE PRACTICAL

№	The topic of the practical lesson	hours
1.	The concept of information. Types of information. Hardware support of personal computers. Basic and additional devices of the computer. Keyboard structure and rules for its use.	3 2
2.	Software for solving medical tasks. Fundamentals of working in the Windows operating system. Work with basic Windows objects.	3 2
3.	Algorithm expression methods and their types. Compilation of algorithms for tasks related to linear medical processes.	3 2
4.	Branching and recurring algorithms. Compilation of algorithms for tasks related to branching and repetitive medical processes.	3 2
5.	Information processing technology for automation of workplaces in medicine. Methods for creating documents, saving documents, exiting a document in a Microsoft Word text editor. Work with hyperlink objects and edit them in Microsoft Word text editor.	3 2
6.	Basics of text editing in Microsoft Word. Work with tabular and graphical information in Microsoft Word. **(Laboratory studies).**	3 2
7.	Digital data processing technology. Microsoft Excel Use of the information system "Electronic registration of births and deaths (including perinatal deaths)" (for employees responsible for providing information).	3 2
8.	Integrated information system "Electronic Health". Statistical processing and evaluation of the results of a biomedical experiment using the spreadsheet editor Microsoft Excel. Use of the information system "Patient" - (for employees of institutions involved in the treatment of patients infected with Covid-19). **(Laboratory studies).**	3 2
9.	Calculation of mean values, variance, confidence interval, Student's t-test (F-Fisher), determination and evaluation of the confidence level and r-correlation coefficient in Microsoft Excel. **(Laboratory studies).**	3 2

10.	Database management systems. Microsoft Access software and its features. Through the program menu: Table, form, query and report.Creating a database in Microsoft Access. (Tables, records, form, report). Use of information systems "Khatlov" and "Emlash" - (for employees of an institution providing primary health care).	3 2
11.	MS Power Point software and its features. Methods and requirements for preparing a presentation. Working with graphics (diagrams and pictures), tables, video objects, and animation and hyperlink elements in MS Power Point. **(Laboratory studies).**	3 2
12.	Website creation software (HTML, FrontPage, Word Press). Page structure, design, frames, text, table, graphics, technology for placing video objects and attaching animation.	3 3

IV. Practical skills:

1. Principles of arithmetic operation of ICT. Types of information and the concept of information.

2. Principles of logical operation of ICT. Number systems. Encoding of information.

3. Hardware of personal computers. Basic and peripheral computer equipment.

4. Software for personal computers. Basics of working in the Windows operating system. Working with the main objects of the Windows operating system.

5. Working with folders and files in the Windows operating system environment. Standard and utility programs in the Windows operating system.

6. The technology of processing text information in the automation of workplaces in medicine. Using the extensive capabilities of the Microsoft Word text editor.

7. Working with hyperlink objects and editing them in a Microsoft Word text editor.

8. Creating and formatting a table in the Word editor. Entering information into a table, formatting, sorting and calculating information.

9. Digital data processing technology. Computer analysis of medical data. Take advantage of the extensive features of the Microsoft Excel spreadsheet editor.

10. Working with text, formulas, diagrams and hyperlinks in the Microsoft Excel spreadsheet editor.

11. MS PowerPoint software and its features. Methods of preparing presentations and requirements for them.
12. Preparation of a sample presentation. Working with presentations (formatting, printing, presentation).
13. Working with computer graphics programs.
14. Visualization in medicine. Graphic editors and their capabilities. Using Adobe Photoshop.
15. Methods and scope of database creation in MS Access. Planning and creation of a database for storing medical and biological information in MS Access.
16. Creating and editing a table in MS Access. Search for the necessary information in the database available in MS Access using search and sorting tools.
17. Organization of work in the global network. Using web browsers to search for biomedical information on the topic.
18. Registration of users on the Internet. Working with email. Ways to send and receive information using applications.
19. Web browsers. Search for medical information on the Internet. The creation of search engines and its importance.
20. Web 1.0 and Web 2.0 technologies.
21. Creating web documents in Word, Excel, PowerPoint.
22. Inserting a hyperlink and an image on a web page using Word, Excel, PowerPoint.
23. Software for creating websites (HTML, Front Page, WordPress).
24. Page structure, design, frames, table, graphics, placement of video objects and animation attachment technology.
25. Creating web pages using software platforms.

V. Independent study and independent work

Recommended topics for self-study

№	The topic of the independent study	hours
1	Construction and solution of differential equations of medical and biological content. Disclosure of practical issues of medicine, biology and pharmacy.	3 2
2	Explaining the elements of mathematical statistics, general and selective complexes, the law of distribution of random variables on the example of a biomedical problem.	3 2
3	The using of elements of mathematical statistics in solving biomedical problems, correlations and regression equations. The study of mathematical modeling methods in medicine. Physical	3 2

- make presentations;
- individual projects;
- Projects for collaboration and advocacy.

VII. Requirements for obtaining loans:

Implementation of practical tasks and tests in the form of current control, successful passing of tests for intermediate and final types of control.

Student knowledge is 100 points based on the criteria listed in the table below evaluated in the system

Score	level	Equivalent score	Mark	Criteria
90-100	A	5	Excellent	The student makes an independent conclusion and decision, can think creatively, observe independently, put into practice the knowledge received, understand the essence of Science (Subject), know,Express, tell, have an idea of science (subject)
85-89	B+	4	Very good	The student makes an independent conclusion and decision, observes independently, is able to apply the knowledge received in practice, understands the essence of science (subject), knows, can express, tell, has an idea of science (subject)
71-84	B	4	good	The student observes independently, is able to put into practice the knowledge received, understands the essence of science (subject), knows, can express, tell and has an idea of science (subject)
60-70	C	3	Satisfying	The student is able to put into practice the knowledge received, understand the essence of the subject (subject), know, Express, tell and have an idea of the subject (subject)

0-59	F	2	Unsatisfactory	The student has not mastered the science program, does not understand the essence of science (subject), does not have an idea of science (subject)

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