Department «Medical Biophysics and Information Technology»
Discipline work program (Syllabus)
Educational program 6B10117 – «Stomatology»

1.	**General information about the Course**		
1.1	Course code: ICT 1105	1.6	Academic year: 2023-2024
1.2	Course name: Information and communication technology	1.7	Year: 1
1.3	Prerequisites: -	1.8	Term: 1
1.4	Post-requisites: Biophysics	1.9	Number of credits (ECTS): 5
1.5	Cycle: general education discipline	1.10	Component: main component
2.	**Course description**		
An ICT role in key sectors of development of society. Introduction to computer systems. Software. Operating systems. Human-computer interaction. Database systems. Data analysis. Data management. Networks and telecommunications. Cybersecurity. Internet technology. Cloud, mobile technology. Multimedia, SMART technology. E-technology. Information technology in the professional sphere. Industrial ICT. Prospects of development of ICT.			
3.	**Summative assessment form**		
3.1	Testing ✅	3.5	Coursework
3.2	Writing	3.6	Essay
3.3	Oral	3.7	Project
3.4	OSPE / OSCE or Practical Skills Acceptance	3.8	Other (specify)
4.	**Discipline objectives**		
The purpose of the discipline. Formation of students ' competence systems in the use of information and communication technologies in practical and scientific activities			
5.	**Learning outcomes (Course learning outcomes)**		
CLO1	Demonstrates knowledge and understanding of terms related to information and communication technologies		
CLO2	Selects and classifies the main and additional computer devices selects software		
CLO3	Applies methods and knowledge in the field of information and communication technologies in medical practice, uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information		
CLO4	Uses various types of information and communication technologies in personal activities: communication skills, the ability to communicate information, problems and their solution, special software for processing medical data		
5. 1	**Course learn-ing outcomes**	**The learning outcomes of the EP, which are related to the learning outcomes of the course**	
	CLO 1 CLO 2 CLO 3 CLO 4	LO5. Observes the rules of ethics, deontology and subordination, demonstrates interpersonal and communicative skills that lead to effective exchange of information and cooperation with patients, their families and medical professionals.	
	CLO 3 CLO 4	LO7. Supports continuous personal and professional growth, constantly improves the quality of medical care based on self-assessment and lifelong learning.	
	CLO 3 CLO 4	LO8. Applies electronic databases of the healthcare system of the Republic of Kazakhstan, providing documentation of the processes of providing medical services	
6.	**Details of the course**		
6.1	Place of classes: Shymkent, Al-Farabi-1 sq., SKMA, main building, 5th floor, Classrooms No. 500-511. Phone: 39-57-57 (1063) Email address: fiz_mat_ict@mail.ru		

6.2	Number of hours	Lecture	Prac. lessons	Lab.lessons	SIW	SIWT
		10	40	-	70	30

7.	**Information about teachers**				
№	Full name	Degrees and title	Email address	Scientific interests, etc.	Achievements

1.	Ivanova Marina Borisovna	PhD, Professor	marina-iv@mail.ru	Theory of differential equations. Medical data processing with STATISTICA, SPSS.	Author of over 50 scientific publications, one monograph, 6 teaching aids, an electronic textbook "Biostatistics", an electronic dictionary "ICT".
2.	Berdiyeva Meruyert Aimambetovna	PhD	meruert_berdieva@mail.ru	Innovative teaching methods	Author of over 60 scientific and methodical articles, 1 book, 11 methodical instructions.
3	Abdrimova Zakhira Maratovna	Master'sdegree Senior teacher	zakira75@mail.ru	Using statistical analysis software STATISTICS for medical data processing	Author of the textbook "Collection of reports from biostatistics" in the Kazakh language. "ICT". Author of several scientific articles.
4	Maulenova Akmaral Aitbekovna	Master'sdegree Senior teacher	maral_tasken@mail.ru	Innovative teaching methods	Author of over 10 scientific and methodical articles, 1 book, 3 methodical instructions.

8. Thematic plan

Week/ Day	Topic name	Summary	Course learning outcomes	Number of hours	Forms / methods / learning technologies	Forms / assessment methods
	An ICT role in key sectors of development of society. Standards in the field of ICT. Introduction to computer systems. Architecture of computer systems	Definition of ICT. Subject ICT and its purposes. An ICT role in key sectors of development of society. Communication between ICT and achievement of the objectives of a sustainable development in the Millennium Declaration. Standards in the field of ICT.Review of computer systems. Evolution of computer systems. Architecture and components of computer systems. Use of computer systems. Data representation in computer systems.	CLO 1	1	Lecture information	Feedback (quick survey)
	PRACTICAL LESSON.. Calculation of metrics of productivity of computer system: speed, efficiency, energy costs, Amdahl's law, CPU time.	Computer lab rules. Architecture and components of computer systems. Use of computer systems. Data representation in computer systems. Computer system: speed, efficiency, energy costs, Amdahl's law, CPU time.	CLO 1 CLO 2	3	seminar individual task	oral survey Solve problems
	SIWT. Consultation on the implementation of an individual task 2 Development of flowcharts of computer devices. Stage 1	Consultation on the implementation of an individual task 1	CLO 2	2/5	individual task	Logical flowcharts
2	LECTURE. Software. Operating systems. Human-computer interaction.	Software. Types of the software, purpose and characteristic. Basic concepts of OS. Evolution of	CLO1	1	Lecture information	Feedback (quick

		operating systems. Classification of operating systems, including for mobile devices. Classification of desktop applications. User interface as means of human-computer interaction.				survey)
	PRACTICAL LESSON. Determination of properties of an operating system. Operation with files and directories.	Multifunctional and single tasking operating system. File directories and folders in operating system.	CLO1 CLO2 CLO3	3	practicum individual task	oral survey practical work
	SIWT Consultation on the implementation of an individual task 2 SIW.Development of flowcharts of operation of devices of the computer. Stage 2.	Graphical method of describing the algorithm for solving the problem	CLO3 CLO4	2/5	individual task 2	compiling the glossary
3	PRACTICAL LESSON.Determination of requirements to development "convenient in application" the website.	Working with programmer Mobirise.	CLO2 CLO3	2	computer based teaching	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 3 SIW. Collecting, the analysis and structuriza-tion of data in the profess-sional environment (deve-lopment of the database in the MS Access). Stage 1.	Creation of databases in MS Access for application in professional sphere	CLO3 CLO4	2/4	individual task 3	creating database
4	LECTURE. Database systems	Bases of database systems: concept, characteristic, architecture. Data models. Normalization. Integrity constraint on data. Query tuning and their processing. Fundamentals of SQL. Parallel processing of data and their restoration. Design and development of databases. Technology of programming of ORM. The distributed, parallel and heterogeneous databases.	CLO1	1	Lecture-information	Feedback (quick survey)
	PRACTICAL LESSON. Development of database structure, creation of tables and requests. Working with a Access database.	The database management system: definitions and functions, basic architectural solutions. The date model of DB. Creating medical database: tables, queries. Working with Forms and Reports.	CLO2	3	computer based teaching	oral survey creation of tab-les and requests.
	SIWT Consultation on the implementation of an individual task 4	Creation of databases in MS Access for application in professional sphere	CLO4	2/4	individual task 4	for preparation

	SIW.Collecting, the analysis and structurization of data in the professional environment (development of the database in the MS Access). Stage 2.					crosswo rd
5	LECTURE. Data analysis. Data management	Data analysis bases. Methods of collection, classification and prediction. Decision trees. Processing of large volumes of data. Methods and stages of Data mining. Tasks Datamining. Visualization of data.	CLO1	1	Lecture informati on	Feedbac k (quick survey)
	PRACTICAL LESSON. Design and creation of the presentations of lecture material, scientific reports, etc.	Creating of presentations, entering text on a slide. Adding of pictures and clip art. MS PowerPoint: adding of hyperlinks, animations and sound effects	CLO2	3	computer based teaching	individu al task spreadsh eets, oral survey
	SIWT Consultation on the implementation of an individual task 5 SIW. Description of network topology of the office building. Stage 1.	Software, hardware of networks using in the office building	CLO3 CLO4	2/4	individual task 5	creating presenta tion
6	PRACTICAL LESSON. Processing of numerical information, editing formulas and creation of charts in spreadsheet editors.	The database management system: definitions and functions, basic architectural solutions. The date model of DB. Creating medical database: tables, queries. Working with Forms and Reports.	CLO2 CLO3	2	computer based teaching	individu al task, oral survey
	SIWT Consultation on the implementation of an individual task 6 SIW. Description of network topology of the office building. Stage 2.	Software, hardware of networks using in the office building	CLO4	2/4	individual task 6	creating of MCQs
7	LECTURE. Networks and telecommunications	End devices, data transfer devices, transmission medium. Types of networks. Stack protocols: TCP/IP, OSI. IP addressing. Local and wide area networks. Wire and wireless network technologies. DHCP protocol. Technologies of connection to the Internet. Telecommunication technologies.	CLO1	1	Lecture informati on	Feedbac k (quick survey)
	PRACTICAL LESSON. Creation of a simple network configuration. IP addressing. Monitoring of a network. Analysis of traffic. Use of sniffers for the analysis of network packets.	Networks and telecommunications. Classification of networks. Types of topologies. Types of servers.	CLO2 CLO3	3	Work in pairs, partial search	individu al task, oral survey
	SIW. midterm control 1 accepting		CLO1	2/3	-	Testing MCQ

	SIWT. Preparation for the midterm control1					
8	LECTURE. Cybersecurity	Security risks of information and their classification. Industry of cybersecurity. Cybersecurity and control of the Internet. Malicious applications. Measures and means of information protection. Standards and specifications in information security field. The acts of the Republic of Kazakhstan governing legal relations in the sphere of information security. Electronic digital signature. Encryption.	CLO1	1	Lecture information	Feedback (quick survey)
	PRACTICAL LESSON. Use of hardware and software for key generation. Application of the EDS and encoding in case of message exchange by E-mail. Settings of the Firewall program element of the computer network for network traffic monitoring and filtering. Working with the various antivirus programs.	Security risks of information and their classification. Measures and means of information protection. Antivirus software. Archiving utility.	CLO3	3	Work in pairs, computer based teaching	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 8 SIW. Comparative analysis of antivirus means of information protection. Stage 1,2.	Development of presentation and web site with information base about anti-virus programs	CLO4	2/3	individual task 8	compiling the glossary for pre-paration crosswo rd
9	PRACTICAL LESSON. Data acquisition from the server. Working with WordPress and Joomla web content management systems.	Development a website design using Photoshop multifunctional graphic editor and CSS style sheet language	CLO2 CLO3	2	work in pairs, tasks	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 9 SIW. Information search in a specialty profile on the Internet, use of cloud services for storage and data processing. Stage 1	Information search in a specialty profile on the Internet, use of cloud services for storage and data processing.	CLO4	2/3	individual task 9	Logical circuits on this topic
10	LECTURE. Internet technology. Cloud and mobile technology	Basic Internet concepts. The Uniform Resource Identifier (URI), its assignment and components. DNS service. Web technologies: HTTP, DHTML, CSS, and JavaScript. E-mail. Message format.	CLO1	1	Lecture information	Feedback (quick survey)

		SMTP, POP3, IMAP protocols. Data centers. Tendencies of development of the modern infrastructure decisions. Principles of cloud computing. Technologies of virtualization. Web service in the Cloud. Main terms and concepts of mobile technologies. Mobile services. Standards of mobile technologies Introduction to Google Docs and Microsoft Office Web Apps cloud services. Creation accounts to work with cloud services. Study of operation modes associated with file storage, sharing and processing. Use of mobile technologies for receiving an information access. GPS navigators. GSM a signalling.				
	PRACTICAL LESSON. Introduction to Google Docs and Microsoft Office Web Apps cloud services. Creation accounts to work with cloud services. Study of operation modes associated with file storage, sharing and processing. Use of mobile technologies for receiving an information access. GPS navigators. GSM a signaling.	Internet technologies. History of the Internet development. Basic Internet concepts. Cloud technologies. Efficiency of cloud technologies application. Working with mobile applications. Internet technologies. History of the Internet development. Basic Internet concepts. Cloud technologies. Efficiency of cloud technologies application. Working with mobile applications.	CLO3	3	Computer based teaching	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 10 SIW. Information search in a specialty profile on the Internet, use of cloud services for storage and data processing. Stage 2	Information search in a specialty profile on the Internet, use of cloud services for storage and data processing.	CLO3 CLO4	2/3	individual task 10	compiling the glossary preparation crossword
11	LECTURE. Multimedia technology. Smart technology	Representation text, audio, video and graphical information in a digital format. Basic technologies for compression of information. 3-D representations of the virtual world and animation. Instruments of development of multimedia applications. Use of multimedia technologies for planning, descriptions of business processes and their visualization.	CLO1	1	Lecture information	Feedback (quick survey)
	PRACTICAL LESSON. Creation of video files with use of programs: HyperCam, Adobe Premiere Pro,	Creating of video files by means of Windows Movie Maker. Use of multimedia technologies for planning, descriptions of business	CLO2	3	computer based teaching	creating of video

	Windows Movie Maker, etc.	processes and their visualization.				
	SIWT Consultation on the implementation of an individual task 11 SIW. Creation of an emblem, the video and other materials on a specialty profile means of multimedia technologies. Stage 1.	Creation of an emblem, the video and other materials on a specialty profile means of multimedia technologies.	CLO3 CLO4	2/3	individual task 11	creating of video, preparation crossword
12	Operation with Smart-applications: Smart TV, Smart Hub, etc.	Creation project skills by working with Google Slides.	CLO2 CLO3	2	computer based teaching	individual task, creating slides
	SIWT Consultation on the implementation of an individual task 12 SIW. Creation of an emblem, the video and other materials on a specialty profile means of multimedia technologies. Stage 2.	Creation of an emblem, the video and other materials on a specialty profile means of multimedia technologies.	CLO3 CLO4	2/3	individual task 12	creating of an emblem, compiling the glossary
13	LECTURE. E-technology. Electronic business. Electronic training. Electronic government	Electronic business: Main models of electronic business. Information infrastructure of electronic business. Legal regulation in electronic business. Electronic training: architecture, structure and platforms. Electronic textbooks. Electronic government: concept, architecture, services. Formats of implementation of the electronic government in developed countries.	CLO1	1	Lecture information	Feedback (quick survey)
	PRACTICAL LESSON. Operation with services on the website of the electronic government http://egov.kz/cms/ru/government-services/for_citizen: registration of requests, obtaining counterparts of documents, etc.	Electronic government: concept, architecture, services. Formats of implementation of the electronic government in developed countries. "Infrastructure of e-government. E-services in the Healthcare."	CLO3	3	computer based teaching	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 13 SIW. Presentation and protection of the main results of design activity in the specialty. Stage 1,2.	Presentation and protection of the main results of design activity in the specialty.	CLO3 CLO4	2/3	individual task 13	development of graphic objects on medicine
14	LECTURE. Information technologies in the professional sphere. Industrial ICT. Prospects of development of ICT	The software for the solution of tasks of the specialized professional sphere. Modern IT trends in the professional sphere: medicine, power, etc. Use of search engines and electronic resources in the	CLO1	1	Lecture information	Feedback (quick survey)

		professional purposes. Safety issues in industrial information and communication technologies. Prospects of development in the sphere of the IT market: development of the free software. Forming of an ecosystem of IT of entrepreneurship and support small startup of the companies. Programs of acceleration and incubation. Development of necessary infrastructure of electronic payments and logistics. Prospects of development of E-technologies				
	PRACTICAL LESSON. Development of structure and the maintenance of a lesson in the environment of remote learning: Moodle, eDX, etc.	Development of structure and the maintenance of a lesson in the environment of remote learning: Moodle, eDX, etc.	CLO2	3	computer based teaching	individual task, oral survey
	SIW. midterm control 2 accepting SIWT. Preparation for the midterm control 2		CLO1	2/3		Testing MCQ
15	PRACTICAL LESSON. Installation and use of application programs in the professional sphere. Working in the Matlab environment for scientific and technical computing. Working with the Matlab toolboxes for applied problem solving.	Installation and use of application programs in the professional sphere. Introduction to STATISTICA 10. Setting documents appearance and working with charts in STATISTICA 10.	CLO2 CLO3	2	computer based teaching,	individual task, oral survey
	SIWT Consultation on the implementation of an individual task 15. SIW. Defense of the independent study of students.	Feedback from students about the results of learning outcomes.	CLO3 CLO4	2/3	individual task 15	creating of MCQ
	Exam preparation and conducting			15		

9.	**Training Methods and Control Forms**	
9.1	lectures	Lecture information (feedback quick survey)
9.2	Practical lessons	Practical work, oral survey, solve problems
9.3	SIW / SIWT	individual task logical flowchart screen recording video, project, presentation
9.4	Mid-term examination	Testing (MCQ)
10.	**Evaluation criteria**	
10.1.	**Criteria for evaluating the learning outcomes of a subject**	

№ LO	Name of learning outcomes	Dissatisfying	Satisfying	Good	Excellent
LO1	Demonstrates knowledge and	• knows the rules of security technology	• knows the safety rules when working	• knows the rules of security technology	• knows the rules of security technology

	perception terms related to information and communication technologies, communication skills, suitable for an effective data exchange.	when working with computer equipment; • does not know the basic concepts in the field of ICT; is difficult when working with standard Windows OS programs and MS Office applications; • Knows the purpose of the primary and partially peripheral PC devices • does not know how to protect information; • does not know the norms of information ethics	with computer equipment; • makes mistakes in the definition of basic concepts in the subject area of ICT; demonstrates selective knowledge when working with standard Windows OS programs and MS Office applications; • Knows the purpose of the primary and partially peripheral PC devices • does not know how to protect information; • does not know the norms of information ethics	when working with computer equipment; • orientates in the definition of basic concepts in the subject area of ICT; demonstrates basic knowledge when working with standard Windows OS programs and MS Office applications; • Knows the purpose of the PC's primary and peripheral devices • knows some principles of information protection; • demonstrates the norms of information ethics	when working with computer equipment; • Freely oriented in the subject area of ICT; demonstrates extensive knowledge when working with standard Windows OS programs and MS Office applications; • Knows the purpose of the PC's primary and peripheral devices • knows the principles of information protection; • demonstrates the norms of information ethics
LO2	Selects and classifies basic extra additional devices and software	1) Poorly classifies the functional circuits of the computer and their devices; 2) Finds difficult to compare the sizes of files of different formats that store the same information 3) Poorly evaluates information, including information received from the media; does not know how to distinguish correct argumentation from incorrect; 4) classifies computer networks and explains the advantages of wireless communication 5) selects various data formats for	1) Partly classifies the functional circuits of the computer and their devices; 2) Partly compares the sizes of files of different formats that store the same information 3) Poorly evaluates information, including information received from the media; does not know how to distinguish correct argumentation from incorrect; 4) classifies computer networks and explains the advantages of wireless communication 5) selects various data formats for solving problems in	1) Can classify the functional circuits of the computer and their devices; 2) Can compare the sizes of files of different formats that store the same information 3) Evaluates information, including information received from the media; does not know how to distinguish correct argumentation from incorrect; 4) classifies computer networks and explains the advantages of wireless communication 5) selects various data formats for solving problems in spreadsheets	1) classifies the functional circuits of the computer and their devices; 2) Can compare the sizes of files of different formats that store the same information 3) Evaluates information, including information received from the media; does not know how to distinguish correct argumentation from incorrect; 4) classifies computer networks and explains the advantages of wireless communication 5) selects various data formats for solving problems in spreadsheets

		solving problems in spreadsheet	spreadsheets		
LO3	Applies methods and knowledge in the field of information and communication technologies in medical practice, uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information	1) Partially uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information 2) cannot use the database in practice; 3)Cannot test the used hardware and software; 4) Finds difficult to use text editors to create and design text documents (formatting, saving, copying fragments, etc.); 5) does not know how to apply the acquired skills: to plot the functions specified in the table and create diagrams in the spreadsheet.	1) Uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information 2) Partially uses the database in practice; 3) Cannot test the used hardware and software; 4) Finds difficult to use text editors to create and design text documents (formatting, saving, copying fragments, etc.); 5) hesitantly applies the acquired skills: to plot the functions specified in the table and create diagrams in the spreadsheet;	1) Uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information 2) Uses the database in practice; 3) Can test the used hardware and software; 4) Uses text editors to create and design text documents (formatting, saving, copying fragments, etc.); 5) Partially applies the acquired skills: to plot the functions specified in the table and create diagrams in the spreadsheet;	1) Uses Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information 2) Uses the database in practice; 3) Can test the used hardware and software; 4) Uses text editors to create and design text documents (formatting, saving, copying fragments, etc.); 5) Applies the acquired skills: to plot the functions specified in the table and create diagrams in the spreadsheet;
LO4	Uses various types of information and communication technologies in personal activities: communication skills, the ability to communicate information, problems and their solution, special software for processing medical data	• It is difficult to create, edit, design, design, transfer information objects using modern software tools and online services; • Does not use LAN and WAN capabilities to collaborate on information • searches for selective information on the Internet; • has difficulty installing software on PCs and mobile applications on a smartphone	• Knows how to create, edit, design, draw, transmit simple information volumes using some software tools; • Does not use LAN and WAN capabilities to collaborate on information • searches for selective information on the Internet; • has difficulty installing software on PCs and mobile applications on a smartphone	• knows how to create, edit, design, draw, transfer information objects of a certain type using modern software tools and online services; • Leverages local and wide area network capabilities to collaborate on information • searches for information of various types on the Internet; • has difficulty installing software on PCs and mobile applications on a smartphone	• knows how to create, edit, design, draw, transmit information objects of various types and difficulties using modern software tools and online services; • Leverages local and wide area network capabilities to collaborate on information • searches for information of various types on the Internet; • installs software on PCs and mobile applications on a smartphone
10.2.	**Criteria for assessing of teching methods and technologies**				

Checklist for assessing of practical lessons		
Control form	**Assessment**	**Criterion for assessment of students' knowledge**
Oral response	Exellent A (95-100%) A- (90-94%)	- does not allow any errors, inaccuracies; - demonstrates knowledge of theoretical material on the topic under consideration; - orientates itself in concepts and directions in the field of ICT and gives them a critical assessment; - determines the relationship of the topic under consideration with the future profession, gives specific practical examples; - refers to additional literary sources when answering, has an additional summary.
	Good B+ (85-89%) B (80-84%) B- (75-79%) C+ (70-74%)	- does not allow any errors, inaccuracies; - demonstrates knowledge of theoretical material on the topic under consideration; - the answer was limited to the use of educational literature specified by the teacher; - orientates itself in the main concepts and directions in the field of ICT.
	Satisfactory C (65-69%) C- (60-64%) D+ (50-54%)	- makes inaccuracies and non-fundamental errors; - demonstrates partial knowledge of theoretical material on the topic under consideration; - the answer was limited to the use of educational literature specified by the teacher; - experienced difficulties in systematizing educational material.
	Unsatisfactory FX (25-49%) F (0-24%)	- makes fundamental errors; - does not know the theoretical material on the topic under consideration; - did not systematize the educational material on the topic under consideration.
Work on a computer	Excellent A (95-100%) A- (90-94%)	- complies with safety rules when working with equipment; - demonstrates extensive knowledge when working with standard Windows OS programs and MS Office applications; - knows the purpose of the main and perefiry devices of the PC; - complies with the principles of information protection; - demonstrates the norms of information ethics; - knows how to create, edit, design, store, transfer information objects of various types and difficulties using modern software tools and online services; - leverages local and wide area network capabilities to collaborate on information; - searches for information of various nature on the Internet; - installs software on PCs and mobile applications on a smartphone
	Good B+ (85-89%) B (80-84%) B- (75-79%) C+ (70-74%)	- complies with safety rules when working with equipment; - demonstrates basic knowledge when working with standard Windows OS programs and MS Office applications; - knows the purpose of the main and perefiry devices of the PC; - complies with some principles of information protection; - demonstrates the norms of information ethics - knows how to create, edit, design, store, transfer information objects of a certain type using modern software tools and online services; - leverages local and wide area network capabilities to collaborate on information; - searches for information of various nature on the Internet; - has difficulty installing software on PCs and mobile applications on a smartphone.
	Satisfactory C (65-69%) C- (60-64%) D+ (50-54%)	- knows the safety rules when working with equipment; - demonstrates selective knowledge when working with standard Windows OS programs and MS Office applications; - knows the purpose of the main and partially peripheral devices of the PC; - does not know how to protect information; - does not comply with the norms of information ethics; - knows how to create, edit, design, store, transfer simple information objects using some software tools; - does not use the capabilities of the local and wide area networks to collaborate on

		information; - searches for selective information on the Internet; - has difficulty installing software on PCs and mobile applications on a smartphone.
	Unsatisfactory FX (25-49%) F (0-24%)	- knows the safety rules when working with equipment; - it is difficult when working with standard Windows OS programs and MS Office application programs; - knows the purpose of the main and partially peripheral devices of the PC; - does not know how to protect information; - does not know the norms of information ethics - it is difficult to create, edit, design, store, transfer information objects using modern software tools and online services; - does not use the capabilities of the local and wide area networks to collaborate on information; - searches for selective information on the Internet; - has difficulty installing software on PCs and mobile applications on a smartphone
	Checklist for assessing of SIW	
SIW 1		
	Task 1. Creating a flowchart	Max 30 / Min 15
1.	- the flowchart, the algorithm are logically correct; - correctly designed input and output data; - there are no errors in the use of structural elements of the scheme and algorithm; - the student reads the flowchart and algorithm without errors.	20-30 Exellent
2.	- the flowchart and algorithm are logically correct, but 1-2 errors or 2-3 shortcomings may be made;	10-20 Good
3.	- mistakes were made in the algorithm, structural elements of the flowchart are incorrectly used; - when explaining the algorithm, the flowchart, the student experienced difficulties, which were corrected with the help of the teacher;	0-10 Satisfactory
	Task 2. Creating databases	Max 50 / Min 25
1.	- DB corresponds to a certain subject area; - The database contains several interrelated tables; - DB tables consist of fields containing different types of data, including graphic ones; - DB tables consist of at least 10 lines; - when filling tables, various MS Access tools ("Input Mask," "Substitution Wizard," etc.) were used, data was imported from MS Excel; - DB contains forms; - DB contains simple and cross queries; - The database contains reports.	40-50 Exellent
2.	- DB corresponds to a certain subject area; - The database contains several interrelated tables; - DB tables consist of fields containing different types of data, including graphic ones; - DB tables consist of at least 10 lines; - DB contains forms; - The database contains simple queries; - The database contains reports.	30-40 Good
3.	- DB corresponds to a certain subject area; - The database contains several tables; - DB tables consist of fields containing different types of data; - DB tables consist of less than 10 rows.	10-30 Satisfactory
4.	- DB does not correspond to a certain subject area; - The database contains only one table;	0-410 Unsatisfactory

	- table fields contain different types of data; -The table contains less than 10 rows.		
	Task 3. Crosswords	Max 10	Min 5
1.	- Crosswords is based on a given topic; - the terms used are significant and reveal the topic; - Crosswords does not contain grammatical and punctuation errors; - Crosswords contains at least 20 questions; - there is a sheet with advice for verification; - the work is originally designed.	5-10	Exellent
2.	- Crosswords is based on a given topic; - Crosswords contains grammatical and punctional errors; - Crosswords contains less than 20 questions; - there is a sheet with tips for verification.	0-5	Good
	Task 4. Glossary	Max 10	Min 5
1.	- Glossary is composed on a given topic; - Glossary contains at least 20 terms and definitions; - definitions are exact, concise, do not contain syntactic errors; - the work is originally designed.	5-10	Exellent
2.	- Glossary is composed on a given topic; - Glossary contains less than 20 terms and definitions; - the definitions contain inaccuracies, errors, are raw material; - the work is casually executed.	0-5	Good
SIW 2			
	Task 1. Creating a Presentation	Max 50	Min 25
1.	- presentation corresponds to the topic; Exellent - a single design style is observed, the style does not distract from the content of the presentation; - different types of slides are used; - slides are not loaded with information, easy to read, do not contain syntactic and punctuation errors; - graphic and animation elements are used; - design principles are observed (laconicity, structure - presentation of the material in a clear, easily memorable form, unification - design in a single graphic and color solution within the entire presentation).	40-50	
2.	- presentation corresponds to the topic; - a single design style is observed, the style does not distract from the content of the presentation; - the same type of slides are used; - slides are loaded with information, difficult to read, do not contain syntactic and punctuation errors; - graphic and animation elements are used; - design principles are partially observed.	30-40	Good
3.	- presentation corresponds to the topic; - the uniform design style is not observed, the style distracts from the content of the presentation; - the same type of slides are used; - slides are loaded with information, difficult to read, contain syntactic and punctuation errors; - graphic and animation elements are used; - design principles are not observed.	10-30	Satisfactory
4.	- presentation does not correspond to the topic; - the uniform design style is not observed, the style distracts from the content of the presentation;	0-10	Unsatisfactory

	- the same type of slides are used; - slides are loaded with information, difficult to read, contain syntactic and punctuation errors; - graphic and animation elements are not used; - design principles are not observed.		
	Task 2. Drawing up test questions	Max 30	Min 15
1.	- test tasks correspond to the topic; - contain at least 20 questions; - the questions are formulated clearly, correctly, specifically; - responses are of the same type and adequate; - the correct answers are presented separately. - test tasks correspond to the topic; - contain 15-20 questions; - the questions are formulated clearly, correctly, specifically; - responses are not of the same type and adequate; - there are correct answers.	20-30	Exellent
2.	- test tasks correspond to the topic; - contain 10-15 questions; - questions are formulated vaguely, incorrectly, not specifically; - responses are not of the same type and adequate; - there are correct answers.	10-20	Good
3.	- test tasks do not correspond to the topic; - contain less than 10 questions; - questions are formulated vaguely, incorrectly, not specifically; - responses are not of the same type and adequate; - correct answers are not specified.	0-10	Satisfactory
	Task 3. Word-cloud	Max 10	Min 5
1.	- word cloud is composed according to the specified topic; - more than 50 terms are used; - terms do not contain grammatical errors; - the work is originally designed.	5-10	Exellent
2.	- word cloud is composed according to the specified topic; - less than 50 terms are used; - terms contain grammatical errors; - the work is originally designed.	0-5	Good
	Task 4. Glossary	Max 10	Min 5
1.	- Glossary is composed on a given topic; - Glossary contains at least 20 terms and definitions; - definitions are exact, concise, do not contain syntactic errors; - the work is originally designed.	5-10	Exellent
2.	- Glossary is composed on a given topic; - Glossary contains less than 20 terms and definitions; - the definitions contain inaccuracies, errors, are raw material; - the work is casually executed.	0-5	Good
SIW 3			
	Task 1. Knowledge Base Logic scheme	Max 30	Min 15
1.	- the scheme is simple and concise, placed on one page; - basic and sufficient concepts on the topic are highlighted as elements of the scheme; - circuit elements are arranged so that their hierarchy is clear (for example, general and specific - in the center, on the periphery - auxiliary); - logical connections are established between the circuit elements (inside the circuit and external, i.e., relationship with adjacent circuits);	20-30	Exellent

	- visual diagram (convenient for perception): symbols, graphic material, color shades, tables, illustrated material are used.		
2.	- the diagram is placed on one page; - basic and sufficient concepts on the topic are highlighted as elements of the scheme; - hierarchy of circuit elements is not traced, material is presented chaotically; - logical connections are established between the circuit elements (inside the circuit and external, i.e., relationship with adjacent circuits); - the diagram is not visual.	10-20	Good
3.	- the diagram is placed on more than one page; - elements of the scheme are not basic and sufficient concepts on the topic; - hierarchy of circuit elements is not traced, material is presented chaotically; - no logical connections are established between the circuit elements; - the diagram is not visual.	0-10	Satisfactory
	Task 2. Creating website	Max 50	Min 25
1.	- the website corresponds to the selected topic, the main ideas of the project are revealed and substantiated; - the organizational structure is clear; - the site has its own style - typography (artistic design of text using fonts, symbols and signs) and the general design of Good are combined; - the color palette is correctly used; - different types of blocks (tabs, shapes,contacts, card, counters,etc. are used at least 3 - included are hyperlinks to other sources of information on subjects not less than 5; - the site contains several pages (2 or more); - there are no grammatical and syntactic errors in the content; - graphic objects are included.	40-50	Exellent
2.	- the website corresponds to the selected topic, the main ideas of the project are not fully disclosed; - the organizational structure is clear; - typography and general design are combined; - background and color correspond to each other; - different types of blocks (tabs,shapes,contacts,card,counters, etc.) are used at least 2; - hyperlinks to other sources of information on subjects not less than 3 are included; - the site consists of 1 page; - there are grammatical and syntactic errors in the content.	30-40	Good
3.	- the website corresponds to the selected topic; - navigation elements are illogical; - typography and general design are not combined; - background and color do not correspond to each other; - blocks of different types (tabs, shapes, contacts, card, counters, etc.) less than 2 are used; - hyperlinks to other sources of information on topics less than 3 are included; - the site consists of 1 page; - content is difficult to perceive; - there are grammatical and syntactic errors in the content.	10-30	Satisfactory
4.	- the website does not match the selected topic; - navigation elements are illogical; - typography and general design are not combined; - background and color do not correspond to each other; - blocks of different types (tabs, shapes, contacts, card, counters, etc.) less than 2 are used; - there are no hyperlinks to other sources of information on the topic;	0-10	Unsatisfactory

	- the site consists of 1 page; - content is difficult to perceive; - there are grammatical and syntactic errors in the content.		
	Task 3. Word cloud	Max 10	Min 5
1.	- word cloud is composed according to the specified topic; - more than 50 terms are used; - terms do not contain grammatical errors; - the work is originally designed.	5-10	Exellent
2.	- word cloud is composed according to the specified topic; - less than 50 terms are used; - terms contain grammatical errors; - the work is originally designed.	0-5	Good
	Task 4. Glossary	Max 10	Min 5
1.	- Glossary is composed on a given topic; - Glossary contains at least 20 terms and definitions; - definitions are exact, concise, do not contain syntactic errors; - the work is originally designed.	5-10	Exellent
2.	- Glossary is composed on a given topic; - Glossary contains less than 20 terms and definitions; - the definitions contain inaccuracies, errors, are raw material; - the work is casually executed.	0-5	Good
SIW 4			
	Task 1. Creating Videos	Max 30	Min 15
1.	- the video is informative, informative, the topic is disclosed; - the director's decision is original; - there are visual effects of the video sequence: credits, text screensavers, graphic screensavers, logo; - participation in the author's video; - work with sound: music or readable text corresponds to the content of the video sequence, high-quality sound, volume is adjusted, sound and image are synchronous; - working with image effects: brightness, contactness, cropping; - video duration is not more than 3 minutes.	20-30	Exellent
2.	- the video is informative, the topic is disclosed; - there are visual effects of the video sequence: credits, text screensavers, graphic screensavers, logo; - work with sound: music or readable text corresponds to the content of the video sequence, high-quality sound, volume is adjusted, sound and image are synchronous; - working with image effects: brightness, contactness, cropping; - video duration 2-3 minutes.	10-20	Good
3.	- the video is uninformative, the topic is not disclosed; - visual effects of the video sequence are small or absent; - music or readable text does not correspond to the content of the video sequence, the sound is poor; - the images are not bright, the contortion is not observed, the images are distorted; - video duration is less than 2 minutes.	0-10	Satisfactory
	Task 2. Creating emblems, logos	Max 50	Min 25
1.	- the image is unique (original, unique); - the image is associative - each of its elements should be associated with the selected field of activity, any line makes sense; - the image is concise - the simpler the image, the better perceived it is; - the image is universal - it is possible to place on the site, on clothes, etc.	40-50	Exellent

	- the color palette and fonts are correctly used; - demonstration of the emblem (logo) is accompanied by explanations of the author (the idea is explained, which symbolizes the elements of the emblem)		
2.	- the image is unique (original, unique); - the image is not associative enough; - the image is overloaded with parts; - image is universal; - the color palette and fonts are correctly used; - demonstration of the emblem (logo) is accompanied by explanations of the author.	30-40	Good
3.	- the image is unique; - the image is not associative enough; - non-universal image; - color palette is not used correctly; - demonstration of the emblem (logo) is accompanied by explanations of the author.	10-30	Satisfactory
4.	- image is not unique; - image is non-associative; - non-universal image; -The color palette is not used correctly.	0-10	Unsatisfactory
	Task 3. Word cloud	Max 10	Min 5
1.	- word cloud is composed according to the specified topic; - more than 50 terms are used; - terms do not contain grammatical errors; - the work is originally designed.	5-10	Exellent
2.	- word cloud is composed according to the specified topic; - less than 50 terms are used; - terms contain grammatical errors; - the work is originally designed.	0-5	Good
	Task 4. Glossary	Max 10	Min 5
	- Glossary is composed on a given topic; - Glossary contains at least 20 terms and definitions; - definitions are exact, concise, do not contain syntactic errors; - the work is originally designed.	5-10	Exellent
	- Glossary is composed on a given topic; - Glossary contains less than 20 terms and definitions; - the definitions contain inaccuracies, errors, are raw material; - the work is casually executed.	0-5	Good
SIW 5			
	Task 1. Creation of graphic objects related to the future profession	Max 70	Min 30
1.	- the image is unique (original, unique); - the image is associative – each of its elements should be associated with the chosen field of activity, any line makes sense; - the image is concise – the simpler the image, the better it is perceived; - the color palette is used correctly.	40-50	Exellent
2.	- the image is unique (original, unique); - the image is not associative enough; - the image is overloaded with parts; - the color palette is correctly used;	30-40	Good
3.	- the image is unique; - the image is not associative enough; - color palette is not used correctly;	10-30	Satisfactory
4.	- the image is not unique, it is not self-sufficient; - image is non-associative;	0-10	Unsatisfactory

	-The color palette is not used correctly.		
	Task 2. Drawing up test questions	Max 30	Min 15
1.	- test tasks correspond to the topic; - contain at least 20 questions; - the questions are formulated clearly, correctly, specifically; - responses are of the same type and adequate; - the correct answers are presented separately. - test tasks correspond to the topic; - contain 15-20 questions; - the questions are formulated clearly, correctly, specifically; - responses are not of the same type and adequate; - there are correct answers.	20-30	Exellent
2.	- test tasks correspond to the topic; - contain 10-15 questions; - questions are formulated vaguely, incorrectly, not specifically; - responses are not of the same type and adequate; - there are correct answers.	10-20	Good
3.	- test tasks do not correspond to the topic; - contain less than 10 questions; - questions are formulated vaguely, incorrectly, not specifically; - responses are not of the same type and adequate; - correct answers are not specified.	0-10	Satisfactory

Check List for midterm control

Computer testing	Max 100	Min 50
Testing is carried out in electronic form.	90-100	Exellent
The test contains 25 questions.	70-89	Good
A 100-point scale is used for evaluation.	50-69	Satisfactory
Test time is determined by the instructor (not more than 50 min)	<50	unsatisfactory

Final control

Grading by letter system	Digital equivalent of points	Percentage	Assessment according to the traditional system
A	4,0	95-100	Exellent
A -	3,67	90-94	
B +	3,33	85-89	Good
B	3,0	80-84	
B -	2,67	75-79	
C +	2,33	70-74	
C	2,0	65-69	satisfactorily
C -	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0,5	25-49	unsatisfactory

11.	**Learning resources**	
	databases, animation simulators, professional blogs, websites, other electronic reference materials (for example: video, audio, digests)	
	Information system «Medicine»	https://online.zakon.kz/Medicine/

Electronic textbooks

1. Сапрыгина, М. Б. Information and communication technology [Электронный ресурс]: учебное пособие / М.Б. Сапрыгина, К. Кудабаев. - Электрон. текстовые дан. (20.2Мб). - Алматы: [s.n.], 2017
2. А.Е.Жатканбаева, Информационное право (общая часть) [Текст] : учеб. пособие; КазНУ им. аль-Фараби. - Алматы: Қазақ ун-ті, 2015. - 147с http://elib.kaznu.kz
3. Информатика и информационные технологии в профессиональной деятельности [Текст]: учебник/ А.А.

Бабкин, С.В. Видов, С.А. Грязнов и др.; под ред.: В.П. Корячко, М.И. Купцов; Федеральная служба исполнения наказаний, Академия права и управления.- Рязань: Академия ФСИН России, 2016.- 354 с. http://elib.kaznu.kz
4. Қ.Ж. Құдабаев. «Информатика» Оқу құралы. Алматы, «Эве-ро», 2020ж. 216б. https://elib.kz/ru/search/read_book/328/
5. Ricklefs V.P. Basics of Informatics: Educational manual for medical specialties of higher educational.– Almaty: Publishing house «Эверо», 2020.– 242p https://elib.kz/ru/search/read_book/363/
6. .К.Ж.Кудабаев, З.С.Халметов, А.А.Мауленова, З.М. Абдримова, А.С.Байдилдаева. Учебно-методическое пособие «Сборник тестовых заданий по информатике». Алматы, «Эверо», 2020г., 150 с. https://elib.kz/ru/search/read_book/2948/
7. .Urmashev, B.A.Information-communication technology: Textbook/ Ministry of education and science of the Republic of Kazakhstan, Association of higher educational institutions of Kazakhstan. - Almaty: Bookprint, 2016. - 413 p. http://rmebrk.kz/ Urmashev B.A.Information-communication technology: Textbook/ Ministry of education and science of the Republic of Kazakhstan, Association of higher educational institutions of Kazakhstan. - Almaty: Bookprint, 2016. - 413 p. http://rmebrk.kz/

Laboratory physical resources

Computers and other electronical devices

Special programs

1	MS office (Word. Excel. Access. Power point)
2	Adobe Photoshop, Bandicam, Movie maker, video pad etc.
3	Moodle, Coursera, STATISTICA

Main Literature

1. Нурпеисова Т. Б. Информационно-коммуникационные технологии: учеб. пособие.-2017
2. Хакимова Т. Практикум по курсу "Основы информатики": уч. пособие. - Алматы: "NURPRESS".-2013
3. Urmashev B.A. Information-communication technology: Textbook /B.A. Urmashev.-Almaty: Association of higher educational instutions of Kazakhstan, 2016
4. Koshimbaev Sh.K. Automation of standard technological processes [Text]: textbook / Sh.K.Koshimbaev, B.A. Suleimenov.-Almaty:[s.n.], 2016.- 266p.
5. Methods of teaching computer science [Текст]: Textbook / E. Bidaibekov [and etc.].- Almaty:[s.n.], 2016.- 359p
6. Nurpeisova T.B. Information andCommunication Technologies: Text-book / T.B. Nurpeisova, I.N. Kaidash.- Almaty: Bastau, 2017.- 480 p.
7. Manapov N.T. Computer chemistry [Текст] : textbook/ N.T. Manapov.- Almaty: Association of higher educational institutions of Kazakhstan, 2016. - 312 p 8.

Additional Literature

8. Қойбағарова Т.Қ. Информатика: оқу-әдістемелік құралы - Түзет. толықт. 2-бас. - Алматы: Эверо.-2014
9. Информатикадан тест тапсырмаларының жинағы: оқу-әдістемелік құрал / Қ. Ж. Құдабаев [т.б.]. - Алматы: Эверо.-2014

Electronic database

№	Title	Link
1	SKMA Repository	http://lib.ukma.kz/repository/
2	Republican Interuniversity Electronic Library	**http://rmebrk.kz/**
3	Student Advisor	http://www.studmedlib.ru/
4	Open University of Kazakhstan	https://openu.kz/kz
5	Law (access in the reference and information sector)	https://zan.kz/ru
7	Scientific Electronic Library	https://elibrary.ru/
8	Open Library	https:// kitap.kz/
9	Thomson Reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com
11	Scopus	https://www.scopus.com/
12	Digital library «Aknurpress»	https://aknurpress.kz/login

12. Course policy

Requirements for studying this course:

1. Do not miss classes without reason;

2. Do not be late for classes;
3. Come to classes in uniform;
4. To be active during the practical classes;
5. To prepare for lessons;
6. Take the students independent work and prepare it timely;
7. Not to do other things during lessons;
8. To be tolerant, polite and friendly to students and teachers;
9. Be careful to the department equipment and furniture.
10. The midterm control of students' knowledge is carried out twice during the semester on the 7th and 14th weeks of theoretical training with the setting of the results of midterm controls in the educational journal of progress and the electronic journal, taking into account penalty points for missing lectures (missed lectures in the form of penalty points are subtracted from the assessments of the midterm control). The penalty point for missing 1 lecture is 1.0 point. A student who does not show up for midterm control without an important reason is not allowed to take the course exam. The results of midterm control are sent to the dean's office in the form of a report at the end of the control week.
11. SIW mark is given at the SIWT lesson, according to the schedule, in the educational register and electronic register also, taking into account the penalty points for missing SIWT lessons. The penalty point for missing 1 SIWT lesson is 2.0 points.
12. Digital educational resources and digital content are placed by the teacher in the "Tasks" module for the attached academic group (stream). All types of training videos are linked to the department's cloud storage.
13. Module "Tasks" AIS Platonus is the main platform for distance learning and placement of all training and teaching materials.

13.	**Academic policy based on the moral and ethical values of the academy**
	https://ukma.kz/
	Академическая политика АО ЮКМА. П. 4 Кодекс чести студента http://surl.li/eroik
	The policy of grading the discipline Discipline Grading Policy Student's final mark (FM) is given at the end of the course, and calculate as a sum of the admission rating mark (ARM) and the final control mark (FCM) and is given according to the point-rating letter system. FM=ARM+FCM Admission rating mark (ARM) is equal to 60 points or 60% and includes: the current control mark (CCM) and midterm control mark (MCM). The current control mark (CCM) is the average score for practical lessons and SIW. The midterm control mark (MCM) is the average score of the two midterm controls. The admission rating mark (60 points) is calculated via the formula: $MCM_{average}$ x 0.2+$CCM_{average}$ x 0.4 Final control (FC) is carried out in the form of testing and the student can get 40 points or 40% of the total mark. When testing, the student is asked 50 questions. Calculation of final control is carried out as follows: If the student correctly answered 45 questions out of 50, it will be 90%. 90 x 0.4 = 36 points. The final mark is calculated if the student has positive marks both in the admission rating (AR) = 30 points or 30% or more, and in the final control (FC) = 20 points or 20% or more. The final grade (100 points) = $MCM_{average}$ x 0.2+$CCM_{average}$ x 0.4+FC x 0.4 A student who has received an unsatisfactory mark for one of the types of controls (MK1, MK2, $CC_{average}$) is not allowed to the exam. Penalty points are subtracted from the average score of the current control.

14. Approval and revision

Approval date	Protocol No.	Head of the Department	Signature
«18» 05 2023 y.	№ 12	Ivanova M.B.	
Approval date	**Protocol No.**	**Chairman of the EPC**	**Signature**
«10» 06 2023 y.	№ 12	L.O.Kenbaeva	
Revision date	**Protocol No.**	**Head of the Department**	**Signature**
«___» ____202__ y.	№ ___		
Revision date	**Protocol No.**	**Chairman of the EPC**	**Signature**
«___» ____202__ y.	№ ___		

Ф-044/270/01-2022

Protocol of approval of the subject "ICT" with other subjects for the 2023-2024 academic year

Coordination disciplines	Proposals for changes in the proportions of the material, the order of presentation, etc.	Protocol numbers and meeting dates of the corresponding departments
1. Biophysics	The ICT course deals with the processing of numerical data and their visualization through the use of Excel spreadsheets, Statistica. The content and sequence of presentation of the material on the ICT discipline is considered appropriate	Reviewed at the meeting of the Department of Medical Biophysics and IT Protocol № 12 "26" 05 2023 y. Head of the Department to Ph.D., ass. professor Ivanova M.B.

Head of the Department
Medical Biophysics and IT, PhD, ass. Professor M.B. Ivanova.