MINISTRY
OF EDUCATION AND SCIENCE AND INNOVATION OF KYRGYZ REPUBLIC
OSH STATE UNIVERSITY
INTERNATIONAL MEDICAL FACULTY

DEPARTMENT OF NATURAL SCIENCES AND MATHEMATICS

TRAINING PROGRAM (Syllabus)

Specialty (direction)	General Medicine (GM)	Course code	N 1.2.1.1
Language of instruction	English	Discipline	Information Technology and Mathematics
Academic year	2025-2026	Number of credits	4
Teacher	Mitalipova A.N. Oichueva B.R.	Semester	1
E-Mail	oichuevab@oshsu.kg mitalipovaa@oshsu.kg	Schedule for the application "OshSU Student"	
Consultations (time/room)	Monday 13:00-14:00	Location (building/room)	IMF 103, 104
Form of study (daytime/correspondence/evening/distance learning)	Daytime	Course type: (compulsory/elective)	Compulsory

Head of the Educational program "General medicine": M.Bugubaeva, Associate Professor

Osh, 2025

Purpose of the course: The aim of the course "Information Technology and Mathematics" is to develop in students a system of theoretical knowledge and practical skills in applying mathematical methods and information technologies for analyzing, processing, modeling, and solving academic and professional tasks using modern digital tools.

Summary of the course:

1. Working with text editor
2. Working with tables
3. Creating presentations
4. Working with database
5. Acquaintance with the OshSU website and AVN system
6. Mathematics in medicine
7. Sets. Sets' operations
8. Differential functions
9. Integral functions
10. Logarithmic function
11. Mathematical Statistics
12. Theory of Probability.

Prerequisites	In order to successfully master the subject, students must have basic knowledge and skills acquired through the study of the following disciplines: • Mathematics (algebra, elements of mathematical analysis); • Computer Science (basic computer skills); • Fundamentals of logic and algorithmization; • Basic skills in working with an operating system and office applications.
Post requisites	The knowledge and skills gained from studying this course are applied in mastering the following subjects: • Programming; • Mathematical modeling; • Data analysis; • Databases; • Information systems and technologies; • Applied mathematics;
Co-requisities	histology, anatomy

learning outcomes		
In the course of mastering the discipline, the student will achieve the following:		
Code of the results of the general education curriculum and its formulation	***Learning outcome of course and its code***	***Code and formulation of competencies***
LO-1 Able to use knowledge of the humanities, natural sciences, and economics.	**LOc-1:** analyze using computer skills and basic software; skills in solving problems	GC-1 able and ready to analyze socially significant problems and processes, use methods of

	using mathematical and information models.	natural sciences, mathematics and humanities in various types of professional and social activities.
LO-4 Capable of solving standard tasks using medical-technical equipment, information and communication resources, and technologies.	LOc-4 able and ready to learn methods of mathematical and algorithmic analysis; skills in using information technologies in educational and professional activities; techniques for processing, analyzing, and presenting information;	IC- capable and ready to work with computer hardware and system and application software to solve professional tasks.

4.Chart of Collection Points

discipline	**credit**	**In-class hours**	**ISW**	**Module 1(25** points**)**				**Module 2 (25** points**)**				**Exam (50** points)	
		40%	60%	In-class hours		ISW/IWST	SC(r)	In-class hours		ISW/IWST	SC(r)		(E)
				Lec.	Pr.			Lec.	Pr.				
Information Technology and Mathematics	4	48	72	10	16	30/6		10	12	30/6			
Cumulative Points Chart				4	4	8	9	4	4	8	9		
Module and Exam Results				(M=tcp.+r+s) до 25 / 25				(M=tcp.+r+s) до 25 / 25					50
				Rдоп. = M1 + M2 (30-50)									
Final Grade				I = Rдоп. + E									100

Topics of the lectures.

№	**Distributions of the week**	**Topic occupations**	**The number of hours**	**Points**
1	20/10-25/10	Introduction. Working with text editor	2	4
2	27/11-1/11	Working with tables	2	4
3	3/11-8/11	Creating presentations	2	4

4	10/11-15/11	Working with database	2	4
5	17/11-22/11	Acquaintance with the OshSU website and AVN system	2	4
6	24/11-29/11	Mathematics in medicine	2	4
7	1/12-6/12	Sets. Sets' operations Logarithmic function	2	4
8	8/12-13/12	Differential functions	2	4
Modul 1				
9	15/12-20/12	Integral functions	2	4
10	22/12-27/12	Mathematical Statistics Theory of Probability.	2	4
			20	4
Modul 2				

Topics of the practical classes.

№	Distributions of the week	Topic occupations	The number of hour		Points
				Pract class	
Модуль - 1					
1	22-25.10.2025	Working with a text editor.		2	4
2	27.10-1.11.25	Working with spreadsheets		2	4
3	3.11-8.11.25	Creating presentations		2	4
4	10 -15.11.25	Creating online presentations		2	4
5	17- 22.11.25	Working with a database		2	4
6	24-29.11.25	Working with a database		2	4
7	1.-6.12.25	Getting acquainted with the OshSU website and the AVN system		2	4
		Module 1			
8		The importance of mathematics in professional activity.		2	4
9		The concept of a set. Operations on sets.		2	4
10		Logarithmic function and its properties.		2	4
11		Increment of an argument and a function. Definition of a derivative. Basic rules of differentiation.		2	4
12		Antiderivative of a function and the indefinite integral. The concept of a definite integral. Properties of the definite integral. The Newton–Leibniz formula.		2	4
13		Elements of probability theory.		2	4
14		Elements of mathematical statistics		2	4

		Module 2		28	4

Plan of IWST (independent work under the supervision of a teacher)

№	Тема	Задание для СРС	Лек	Прак	Оценочные средства	Баллы	Литература	Срок сдачи
	Модуль 1							
1.	PowToon	Creating presentations on Powtoon	2		Online presentation	3	1,2,3,4	2nd week
2	Prezi	Creating presentations on Prezi		3	Online presentation	4	1,2,3,4	4th week
	Модуль 2							
3	The derivative of a complex function.	The derivative of a complex function; The derivative of logarithmic functions.	3		PPTpresentation	4	2,5,6	8 th week
4	Derivative of a trigonometric function	Derivatives of trigonometric functions	,	2	PPTpresentation, Filling the table MCQ	4	1,3,4	9th week
5	The basic concepts of integral calculus.	- Integration by the method of variable replacement - Integration by the method of introduction under the sign of differentiation. -Integration by the piecemeal method		2	PPTpresentation, Filling the table MCQ	4	1,2,5	10th week
			5	7		4		

Plan of organization ISW

№	Topic	Task for ISW	Hours	Assessment tools	Marks	Reference	Deadline

1.	Introduction to the discipline "Information Technology and Mathematics"	PPT presentation	7	Oral survey	4	Main 1,2,3,4	1-week
2.	Basic concepts and terms of information technology	Paper(essay)	7	Testing	4	Main 1,2,4	2-week
3.	Information, data, and ways of their representation	Creative work	6	OS	4	Main 1,2,3,4 Add 1	3-week
4.	Algorithms and their properties	Creative work	7	T	4	Main 1,2,3, Add 1	4-week
5.	Fundamentals of algorithmization and logical thinking	Literature review	7	OS	4	Main 1,2,3,4	5-week
6.	Mathematical operations and calculations using IT	PPT presentation	6	T	4	Main 1,2,3,4 Add 1	6-week
7.	Spreadsheets as a tool for mathematical calculations	Creative work	7	SGD-small groups discussion	4	Main 1,2,3,4 Add 1	6-week
8.	Mathematical functions and their application in computations	PPT presentation	7	SGD	4	Main 1,2,3,4 Add 1	7-week
9.	Processing and analysis of numerical data	PPT presentation	6	OS	4	Main 1,2,3,4 Add 1	8-week

Chart of collection points for Current control(CC)

sum of marks of each class

Number of classes

Chart of collection points of IWST

sum of marks of IWST

Number of IWST

Top.№1(4m) + Top.№2(4m) + Top.№3(4m)
Exsample: ISW = sum of marks of ISW ---------- =4 marks
3

1. **Chart of collection points for Module**

- 4marks for practical classes,

- 4marks for lecture classes ,
- 4marks for ISW,
- 4marks for IWST
- 9marks for summary control

Exsample: M1 =Pc(4m)+Lec(4m)+ISW(4m)+IWST(4m)+SC(9)=25marks

The organization of the educational process is carried out on the basis of a credit-modular system according to the requirements, with the use of a modular rating system for assessing the progress of students using the AVN information system.

Requirements:

a) Mandatory attendance;
b) Activity during lectures and practical classes;
C) Preparation for classes, homework.

Unacceptably:

a) being Late;
b) Untimely delivery of tasks.

Bonus points consist of activity in the classroom, performing extracurricular independent work by students, scientific work, attendance of lectures.

Penalty points consist of points received for dishonesty, inactivity, absenteeism, etc.

Bonus points.

1. Preparation of presentations – 2 points.
2. Production of tables, crossword puzzle: -1 point.
3..Systematic active work during the semester in practical classes and in lectures - 3 points.
4. 100% attendance-2 points
5.Preparation of the report and presentation at student conferences - 5 points

Penalty point.

1. Regular lateness to classes – 1 point.
2. Missed lectures and classes - 2 points
3. Disrespectful attitude to teacher-3 points.
5. Smoking on the territory of the medical institution – 3 points.
6. Damage to the Cathedral property - 3 points
8. A systematic lack of preparation for practical classes – 2 points.
9. Violation of discipline classes - 1 point

Note: a student can score a maximum of 10 bonus points and penalty points not more than 10 (per semester).

Table of scoring of discipline « Information Technology and Mathematics »

Rating (points)	Gradebased on letter system	The numeralequivalent evaluation	Traditional system assessment
87 – 100	A	4,0	Excellent
80 – 86	B	3,33	Good
74 – 79	C	3,0	
68 -73	Д	2,33	Satisfactorily
61 – 67	E	2,0	
31-60	FX	0	Unsatisfactory

Electronic resources	1. Khan Academy – математика, логика, основы программирования https://www.khanacademy.org 2. Coursera – онлайн-курсы по ИТ, математике, анализу данных https://www.coursera.org 3. edX – курсы университетов по математике и информационным технологиям https://www.edx.org 4. MIT OpenCourseWare – бесплатные курсы по математике и ИТ https://ocw.mit.edu 5. Wolfram Alpha – математические вычисления и моделирование https://www.wolframalpha.com 6. GeoGebra – визуализация математических моделей https://www.geogebra.org 7. Desmos – онлайн-графики и функции https://www.desmos.com 8. Google Scholar – научные статьи и публикации https://scholar.google.com 9. eLIBRARY.RU – электронная научная библиотека https://www.elibrary.ru 10. Национальная электронная библиотека (НЭБ) https://rusneb.ru 11. YouTube (образовательные каналы) – видеолекции по ИТ и математике https://www.youtube.com 12. Stepik – интерактивные курсы по программированию и математике https://stepik.org
E-learning	1. Информационные технологии в образовании – электронный учебник https://znanium.com 2. Информатика и ИКТ (электронные учебники для СПО и вуза) https://urait.ru 3. Математика для вузов (алгебра, математический анализ) https://www.lanbook.com

Укуктук ченемдик актылар	*https://drive.google.com/drive/home*
Textbooks (library)	1. Прикладная математика и информационные технологии https://www.elibrary.ru 2. Высшая математика (электронные учебные издания) https://studentlibrary.ru 3. Национальная электронная библиотека (НЭБ) – учебники по математике и ИТ https://rusneb.ru 4. Open Textbook Library – бесплатные электронные учебники (англ.) https://open.umn.edu/opentextbooks 5. LibreTexts Mathematics & Computer Science (англ.) https://libretexts.org 6. MIT OpenCourseWare (учебные материалы и конспекты) https://ocw.mit.edu