



Educational institution
"Royal Metropolitan University"

Quality management system
Syllabus of the discipline

«Higher mathematics and computers science» of the «DNHD» EI "RMU"

EI "ROYAL METROPOLITAN UNIVERSITY"
Department of Natural and Humanitarian Disciplines



SYLLABUS

Program:	General medicine
Qualification of the graduate:	General practitioner / Medical doctor
Year:	2025-2026
Semester:	2
Course duration:	18 weeks
Instructor/Assistant/Professor	Dzhumagulov E.K.
Department:	Humanities
Day and Time for consultation:	Tuesday at 11:00-13:30., room 211
Classroom:	211
e-mail:	
Course Title:	Higher mathematics and computers science
Must/Elective:	
Credit/Hours:	2

Bishkek 2025



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1. Name **Dzhumagulov E.K.** e-mail:

2. **Description of discipline:**

To promote the mastery of medical students with the mathematical apparatus necessary for solving theoretical and practical problems, the development of students' ability to study mathematical literature independently and the ability to express natural science and clinical problems in mathematical language;

Based on the study of the basic concepts of computer science, to prepare a specialist with knowledge and skills that allow using computer applications, means of information support for medical decisions, automated medical and technological systems for solving problems of medicine and healthcare

The place of discipline in the structure of the BEP (prerequisites, postrequisites) –
The discipline " Higher mathematics and computers science " refers to the basic part of the disciplines of the humanitarian, social and economic cycle of the BEP training specialists in the direction of "Medicine". It is an ideological and scientific-methodological basis for the study of humanitarian and socio-economic disciplines.

Prerequisites: For successful studying of this course, student must know:
Higher math: Calculus systems, algebra, differential calculus, elementary statistics. Physics: Mechanics, basics of thermodynamics, electricity, elements of nuclear physics, optics. Anatomy.

Post-requisites: Biochemistry, epidemiology, normal physiology.
Learning Outcomes: (expected knowledge & ability at the end): Fundamentals of differential and integral calculus.

The theory of first-order differential equations with separable variables.

Fundamentals of statistical methods in clinical and laboratory experimental studies.

Competencies of students, formed as a result of mastering the discipline, planned results of mastering the academic discipline.

1. **Name and complexity of the discipline**

№	Name of discipline	course	semester	Week	Academic hours		Independent work	Total
					Lecture	Practice	IWS	
1	Higher mathematics and computers science	1	2	18	18	18	24	60

2. **Thematic plan for modules (indicating weeks and hours, dates)**

2 semester

Course Plan	Lecture / Practice	Topic	Date	hours
1 week	Lecture	<i>Topic 1. Elementary functions (linear, quadratic, logarithmic, trigonometric, exponential, etc.)</i>		2
2 week	Lecture	<i>Topic 2. Fundamentals of differential calculus (differential, partial derivatives, total differential, application of differentials</i>		2



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		<i>in approximate calculations).</i>	
3 week	Lecture	Topic 3. Fundamentals of integral calculus (indefinite and definite integrals, methods of integration).	2
4 week	Lecture	Topic 4. Random variables. Fundamentals of mathematical statistics	2
5 week	Lecture	Topic 5. Fundamentals of mathematical statistics	2
6 week	Lecture	Topic 6. Introduction to medical informatics. Definition of information, the information process, properties of information, and informatics.	2
7 week	Lecture	Topic 7. Main components of a PC. Internal and peripheral PC devices	2
8 week	Lecture	Topic 8. PC software. Computer service software. PC operating system.	2
9 week	Lecture	Topic 9.	2
1 week	Practice	Topic 1. Construction and study of elementary functions	2
2 week	Practice	Topic 2. Calculation of derivatives and application of differentials	2
3 week	Practice	Topic 3. Calculation of integrals and their application	2
4 week	Practice	Topic 4. Analysis of random variables and statistical data processing	2
5 week	Practice	Topic 5. Final assessment of knowledge for Unit 1	2
Module 1 (Date)			
6 week	Practice	Topic 6. Structuring a document and creating a table of contents	2
7 week	Practice	Topic 7. Introduction to MS Excel. Basic principles of working with a spreadsheet processor. The concept of cells with absolute and relative addresses.	2
8 week	Practice	Topic 8. PC software. Computer service software. PC operating system.	2
9 week	Practice	Topic 9. Final assessment of knowledge for Unit 2	2
Module 2 (Date)			

3. Schedule of consultations

Semester	Group	Week	Time	Room
1	GM-1,2,3,4,5,6-25	Saturday	12.00-13.00	211

4. Schedule for receiving detentions

Semester	Group	Week	Time	Room
1	GM-1,2,3,4,5,6-25	Saturday	12.00-13.00	211



5. List of basic and additional literature

1. Nelkon M. Advanced Level Physics 7ed 1995
2. Nelkon M. Advanced Level Physics part 1-2 1995
3. Nelkon M. Advanced Level Physics part 3-4 1995
4. Amanbaeva G.M. Higher Mathematics 2016
5. Amanbaeva G.M., Ismailova Ch.S. Medical and Biological Physics, Laboratory Works (I Part) 2023
6. Amanbaeva G.M., Ismailova Ch.S. Medical and Biological Physics, Laboratory Works (II Part) 2023
7. Manzhikova S. Ts. Bases of Statistical Analysis Medical and Biological Data Using Excel 2020
8. Albert Rutherford, JatH.Kim PhD The Art of Statistical Thinking 2022
9. Alexander C.Mamourian Practical MR Physics 2010
10. Neil A. Weis Introductory statistics 2019
11. Herman, Irving Physics of the Human Body 3rd edition 2014
12. Paul Davidovits Physics in Biology and Medicine, 3rd edition 2008
13. Lawrence Davis Body Physics: motion to metabolism 2020

6. Course policy and evaluation criteria:

Type of control (current, milestone, final)	Control form	Assessment of learning outcomes
Current control	Oral surveyey, written work	40 points
IWS+IWW	Perfoming assignments, work with literature	20 points
Milestone control (modul submission)	Testing, control tasks	40 points
Final control (differential test) https://aisrmu.edu.kg/	Conversation, examination	100 points

Scale of correspondence between grades and scores on the final control (exam)	
Score	Grade
90-100	«excellent»
76-89	«good»
60-75	«satisfactory»
0-59	«unsatisfactory»

7. Policy of the academic discipline (corporate culture code, student code of ethics):

- Mandatory attendance.
- Active participation of the student in practical classes, preliminary preparation and homework.
- High-quality and timely completion of tasks for the SIW.
- Participation in all types of control (current, milestone, final).

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Additional requirements:

- a. one lateness to classes and / or leaving before their end for any reason is considered as one missed lesson that is not subject to recovery;
- b. unacceptable: the use of cell phones during classes, deceit and plagiarism, late delivery of assignments, non-compliance with subordination and rules of conduct.

Help: For advice on the implementation of independent work (SIW), their delivery and protection, as well as for additional information on the material covered and all other questions you may have about the course, please contact the teacher during the hours allotted for consultations.