



Educational Institution
"Royal Metropolitan University"

Quality Management System
Syllabus of the discipline "Medical Biology"
Specialty 560001 "General Medicine" EI "RMU"


Educational Institution "Royal Metropolitan University"
Department "Morphological and Fundamental disciplines"

SYLLABUS
in the discipline "Medical Biology"
for students of specialty 560001 "General Medicine"

Form of study	full-time
Course	1
Semester	1
Zachet	1
Total credits according to the curriculum	2
Total hours according to the curriculum	60
Lectures	18
Practical classes	18
Independent work	24

Syllabus developer:
Ph.D., Jalilova A.A.

Reviewed and approved at a meeting of the
department of "Morphological and
Fundamental disciplines"
Protocol No. 1 from "9" September 2024.
Head of the department PhD Jalilova A.A.


(signature)

Bishkek 2024



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Name and complexity of the discipline.

Course	Semester	Weeks	Total academic hours		Number of hours for independent work		Total hours	Number of modules
			Lecture	Practical classes	SIW	SIWT		
1	1	18	18	18	12	12	60	2

Annotation of subject

"Medical Biology" belongs to the cycle of natural science and medical-biological disciplines in the specialty General Medicine of higher professional medical education, and is studied in the first semester. The training of biology students in medical universities is carried out on the basis of the continuity of knowledge, skills and competencies acquired in the biology course of general educational institutions, as well as knowledge of biochemistry, physiology, and genetics. The teaching of this subject is based on a systematic study of the laws and regulations of the educational program in human biology, the requirements of the State Educational Standard of Higher Professional Education in the field of preparation "Medical Biology". Here basic information on anthropology, anatomy and human physiology is presented, which makes it possible for students to develop a comprehensive understanding of the functioning of man as a biological object.

The program is designed for theoretical and practical training of qualified specialists.

Purpose and objectives of the discipline.

Purpose and objectives of the discipline: The goal of the "Medical Biology" course is to form and master fundamental knowledge of general biological patterns in the study of the development of the human body, issues, parasitology, as the theoretical foundations of pharmacy and the formation in students of the logic of biological thinking and practical skills necessary for the subsequent work of a general practitioner representing the greatest interest for practical healthcare. Due to progress in the field of biotechnology and biometrics.

After mastering the discipline "Medical Biology" the student:



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Will know:

- the role of the subject of Medical Biology in clinical medicine.
- organization of living systems; the principle of reproduction of organisms (asexual and sexual);
- in karyokinesis machines of the type mitosis and meiosis, their biological significance;
- ontogenesis and its periodization.
- has the skills to study scientific literature
- basic concepts, terms necessary when studying the course of "Medical Biology" connecting with cynic subjects.
- theoretical and practical foundations of biology using the example of the human body.

Will be able to use:

- prepare temporary microslides for analyzing the structure and identification of cells, division phases (mitosis and meiosis), embryonic stages of vertebrate development;
- identify pathogens of protozoal invasions;
- identify pathogens on micro- and macropreparations.
- determine the main stages in the direction of evolution of various human systems, patterns of phylogenesis, structure and functions, as well as anomalies in their development;
- solve specific biological problems.

Will be able to assess:

- master microscopy methods and techniques for preparing temporary microslides for analyzing the structure and identification of cells, division phases (mitosis and meiosis), embryonic stages of vertebrate development,
- methods for identifying pathogens of protozoal invasions;
- methods for identifying pathogens on micro- and macropreparations.
- the main stages of the direction of evolution of various human systems, patterns of phylogenesis, structure and functions, as well as anomalies in their development.



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Contents of the academic discipline

№	Name chapters and topics of discipline (lectures and practical classes)	Auditory lessons				Total hours for classroom work	Used educational technologies, methods and methods of teaching	Models	Forms of current and border control academic performance
		Lectures	Seminars	Practical lessons	Laboratory works				
1	Biology – the theoretical basis of Medicine, living systems	2		2		4	Lecture- presentati on Practical lesson. Forum type discussion	Lab. equip.	Oral questioning with reinforcement of material. Solving crossword puzzles.
2	Human adaptation. Biorhythmology. Homeostasis.	2			2	4	Lecture- presentati on Practical lesson. Forum type discussion	Lab. equip.	Oral questioning with reinforcement of material; Assessment of the development of practical skills; Testing.



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3	Cytology fundamentals. Cell biology. Cell cycle.	2		2	4	Lecture- presentati on Practical lesson. Practicing practical skills;	Lab. equip.	Oral questioning with reinforcement of material; Assessment of the development of practical skills. Testing.
4	The forms of reproduction and their cytological basis.	2	2		4	Lecture- presentati on Practical lessons: Working in small groups (TBL); Analysis of situational problems.		Oral questioning with reinforcement of material; Solving situational tasks; Testing
5	Developmental biology.	2	2		4	Lecture- presentati on Practical lessons. Analysis of		Oral questioning with reinforcement of material; Assessment of the development




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							situational problems		of practical skills Testing
	Module #1						Testing by using the educational platform test.edu.kg		Individual student survey
6	Inheritance on the cellular and molecular level. Properties of genes. Types.	2		2		4	Lecture- presentation Practical lesson: Practicing practical skills; Forum type discussion Analysis of situational problems		Oral questioning with reinforcement of material Assessment of the development of practical skills (abilities); Solving situational problems;
7	Variation and its forms. Mutation. Types.	2		2		4	Lecture- presentation Practical lesson. Practicing practical skills.		Oral questioning with reinforcement of material Assessment of the development of practical

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								skills (abilities). Solving situational problems Testing
8	Modern theories of Evolution.	2		2		4	Lecture using video mater. Discussion of theoretical material	Oral questioning of material Checking the SIW.
9	Introduction to Ecology. Problems of protection the Biosphere.	2		2		4	Lecture using video mater. Discussion of theoretical material Listening to abstracts.	Oral questioning of material Checking the SIW
	Module #2						Testing by using the educational platform test.edu.kg	Writing control work

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Methodological recommendations for preparing for practical classes

Practical classes are held after lectures and are explanatory, generalizing and reinforcing in nature. They can be carried out not only in the classroom, but also outside the educational institution.

During practical classes, students perceive and comprehend new educational material. Practical classes are systematic, regularly following each lecture or two or three lectures.

Practical classes are carried out according to the schedule of the educational process and independent work of students in the disciplines.

When preparing for practical classes, it is necessary to study in advance the methodological recommendations for its implementation. Pay attention to the purpose of the lesson, the main questions to prepare for the lesson, and the content of the topic of the lesson.

Before each practical lesson, the student studies the seminar lesson plan with a list of topics and questions, a list of references and homework on the material presented at the seminar. The following scheme of preparation for the seminar lesson is recommended for the student:

1. work through lecture notes;
2. read the basic and additional literature recommended for the section being studied;
3. answer the questions of the seminar lesson plan;
4. study the topic and select literature for writing abstracts, reports, etc.

Plan for organizing student's independent work

Thematic plan for student's independent work (SWS)


Theme of SIW	Task for SIW	Hours	Literature	Dead line	Max points
Biology – the theoretical basic of Medicine, living systems	Making the a brief concept.	2	Michael Kent, Advanced Biology, Oxford University Press, 2000.	1,2	10



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Reproduction. Types.	Making a cross word.	3	Cassell E. The nature of suffering and the goals of medicine. New York: Oxford University Press, 1991:155.	3,4	10
Sexual reproduction. Forms.	Presentation.	3	Macmillan Guide to Science, 2008.	5,6	10
Asexually reproduction. Forms.	Presentation.	3	Alberts B, Bray D, Johnson A et al. (1997) Essential Cell Biology. London: Garland Publishing. http://www.spsl.nsc.ru/win/nelbib/biolog/pricl.biology.htm	7-8	10
Basics of ontogeny	Preparation of test tasks.	3	Ron Pickering, Complete Biology, Oxford University Press, 2001.	9-10	10
Variation. Types.	Assay.	3	Andrew Allott, David Mindorff, Biology: Course Companion, IB Diploma Programme, Oxford University Press, 2002.	11-12	10
Mutation. Types.	Report.	3	Pauline Lowrie, Susan Wells, Microbiology and Biotechnology. Series editor: Mary Jones. Cambridge University Press, 2000.	13-14	10
Ch. Darwin's theory.	Makin's MCQs.	2	Educational center. Med. biology.	15-16	10

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			http://www.alleng.ru/edu/biolog 2.htm 3PDF		
Main ecological problems in the world.	Presentation.	2	Med biology. Navigator on informative resources http://www.spsl.nsc.ru/win/nelbib/biolog/pricl.biology.htm	17,18	10

Methodological recommendations for preparing independent work

In studying the discipline "Medical biology" the following types of independent work of students are used:

- study of theoretical material from lecture notes and recommended textbooks, educational literature, reference sources;
- independent study of some theoretical issues not covered in lectures, with writing abstracts and preparing presentations;

Students are invited to read and meaningfully analyse monographs and scientific articles on biochemistry. The results of working with texts are discussed in practical classes.

To develop independent work skills, student's complete assignments, independently turning to educational, reference and scientific-methodological literature. Testing the completion of assignments is carried out both in practical classes with the help of students' oral presentations and their collective discussion, and with the help of written independent work.

An abstract is a brief written summary of the content of a scientific work on a given topic. This is an independent research work where the student reveals the essence of the problem under study with elements of analysis on the topic of the essay.

Presents various points of view, as well as his own views on the problems of the topic of the essay. The content of the abstract should be logical; the presentation of the material should be of a problem-thematic nature.


Requirements for writing an abstract:

The volume of the abstract can range from 9-10 printed or handwritten pages.

Main sections: table of contents (outline), introduction, main content, conclusion, bibliography.

The text of the abstract must contain the following sections:

- title page indicating: name of the university, department, topic of the abstract, full name of the author and full name of the teacher
- introduction, relevance of the topic.
- main section.
- conclusion (analysis of the results of the literature search); conclusions.

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- the list of literary sources must have at least 10 bibliographic titles, including network resources.

The text part of the abstract is drawn up on a sheet of paper in the following format: indentation at the top – 2 cm; left indent – 3 cm; indentation on the right – 1.5 cm; bottom indent – 2.5 cm; text font: Times New Roman, font height – 14, space – 1.5; page numbering is at the bottom of the sheet. There is no number on the first page.

The abstract must be completed competently in compliance with the culture of presentation. There must be references to the literature used, including periodical literature for the last 5 years.

Abstract evaluation criteria:

- relevance of the research topic;
- correspondence of the content to the topic;
- depth of material elaboration;
- correctness and completeness of development of the questions posed;
- the significance of the findings for further practical activities;
- correctness and completeness of the use of literature;
- compliance of the abstract design with the standard;
- quality of communication and answers to questions when defending an abstract.

A report is a type of brief but informative message about the essence of the issue under consideration, various opinions about the subject being studied. In some cases, it is allowed to present the author's own point of view within the framework of thematic issues.

Requirements for the report:

The volume of the abstract should not exceed five printed pages.

A quality report has four main structural elements:

- Introduction;
- Introduction (at this stage the speaker must interest the audience, formulate the relevance and novelty of the research, emphasize the importance and purpose of the work performed.)
- The main part (it talks about the research methods used, the work done, and analyses the results obtained);
- Conclusion (summarizing the results of the work).

The text part of the report is drawn up on a sheet of the following format:

- indentation at the top – 2 cm; left indent – 3 cm; indentation on the right – 1.5 cm; bottom indent – 2.5 cm;
- text font: Times New Roman, font height – 14, space – 1.5;
- page numbering is at the bottom of the sheet. There is no number on the first page.

Criteria for evaluation:

- timeliness of submission;



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- compliance with requirements;
- depth of material elaboration;
- relevance of the content to the topic;
- correctness and completeness of use of the source.

A **crossword** is a puzzle task; its essence is to fill in intersecting rows of cells (vertically and horizontally) with words that can be solved according to the given list of definitions of the meaning of these words (questions).

Requirements for crossword design:

Crossword type – classic;

- the presence of unfilled cells in the crossword puzzle grid is not allowed;
- random letter combinations and intersections are not allowed;
- the hidden words must be nouns in the nominative case;
- two-letter words must have two intersections;
- abbreviations are not allowed;
- reductions are not allowed;
- all texts must be written legibly;
- each sheet must contain the author's surname;
- the crossword picture must be clear;
- grids of all crossword puzzles must be completed in two copies: with words filled in and only with position numbers;

Answers to the crossword puzzle are published separately, they are intended to check the correctness of the crossword puzzle solution.


Criteria for evaluation:

- originality of design;
- timeliness of submission;
- crossword volume;
- clarity of question formulation;
- aesthetics of work.

References:

Main textbooks

1. Michael Kent, Advanced Biology, Oxford University Press, 2000.
2. Macmillan Guide to Science, 2008.
3. Pauline Lowrie, Susan Wells, Microbiology and Biotechnology. Series editor: Mary Jones. Cambridge University Press, 2000.
4. Andrew Allott, David Mindorff, Biology: Course Companion, IB Diploma Programme, Oxford University Press, 2002.
5. Ron Pickering, Complete Biology, Oxford University Press, 2001.

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6. Trimble Louis. English for Science and Technology. A Discourse Approach. – USA: Cambridge University, University Washington, 1992. –p. 53-54.
7. Cassell E. The nature of suffering and the goals of medicine. New York: Oxford University Press, 1991:155.

Textbooks for further reading:

1. Darwin C (1859) On the Origin of Species. London: Murray.
2. Madigan MT, Martinko JM & Parker J (2000) Brock's Biology of Microorganisms, 9th edn. Englewood Cliffs, NJ: Prentice Hall.
3. Margulis L & Schwartz KV (1998) Five Kingdoms: An Illustrated Guide to the Phyla of Life on Earth, 3rd edn. New York: Freeman.
8. Michael Kent, Advanced Biology, Oxford University Press, 2000.
9. Macmillan Guide to Science, 2008.
10. Pauline Lowrie, Susan Wells, Microbiology and Biotechnology. Series editor: Mary Jones. Cambridge University Press, 2000.
11. Andrew Allott, David Mindorff, Biology: Course Companion, IB Diploma Programme, Oxford University Press, 2002.
12. Ron Pickering, Complete Biology, Oxford University Press, 2001.
13. Trimble Louis. English for Science and Technology. A Discourse Approach. – USA: Cambridge University, University Washington, 1992. –p. 53-54.
14. Cassell E. The nature of suffering and the goals of medicine. New York: Oxford University Press, 1991:155.



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Monitoring and evaluation of learning outcomes

Each module is assessed using a 100-point system. The maximum score is 100. A student is allowed to take the final test if he has a total score in the discipline of 60 points or more.

The results of the modules are added up and the average score is displayed.

Scoring Policy	Module 1	Module 2
Classroom work (activity in discussions, oral questioning)	40 points	40 points
Independent work	20 points	20 points
Report, etc.	40 points	40 points
Total per module:	100 points	100 points

Evaluation criteria:

Criteria for assessing the practical lesson:

- an **"excellent"** grade is given to a student if he has knowledge of the discipline in the full scope of the program and comprehends the discipline sufficiently deeply; independently, in a logical sequence and exhaustively answers all questions, emphasizing the most essential, is able to analyse, compare, classify, generalize, concretize and systematize the studied material, highlight the main thing in it;
- a **"good"** rating: the student has knowledge of the discipline almost in full of the program (there are knowledge gaps only in some sections); independently and partly with leading questions, gives complete answers to the ticket questions; does not always highlight the most significant, but at the same time does not make serious mistakes in the answers;
- a **"satisfactory"** grade is given in cases where the student has the basic knowledge of the discipline; shows difficulty in answering independently, uses imprecise formulations; in the process of answering, errors are made regarding the substance of the questions;
- an **"unsatisfactory"** grade is given in cases where the student has not mastered the required minimum knowledge of the subject and is unable to answer the questions on the ticket even with additional leading questions from the teacher.

Criteria for assessing the performance of laboratory work

- A grade of **"5"** is given if the student completes the work in full in compliance with the required sequence of experiments and measurements; independently and rationally installs the necessary equipment; conducts all experiments under conditions and modes that ensure correct results and conclusions are obtained; complies with the requirements of labour safety rules; correctly and accurately completes all entries, tables, graphs, and calculations in the report.




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- A "4" rating is given if the requirements for a "5" rating are met, but two or three shortcomings were made, no more than one minor error and one shortcoming.
- A rating of "3" is given if the work is not completed in full, but the volume of the completed part is such that it allows you to obtain correct results and conclusions: if errors were made during the experiment and measurements.
- A rating of "2" is given if the work is not completed completely and the volume of the completed part of the work does not allow one to draw correct conclusions: if experiments, measurements, calculations, observations were carried out incorrectly.

Evaluation criteria for the report and presentation

No	Criteria	Assessment	Number of points
1	Structure	<ul style="list-style-type: none">- the number of slides corresponds to the content and duration of the speech (for a 7-minute speech it is recommended to use no more than 10 slides)- presence of a title slide and a conclusion slide	till 2 points
2	Visibility	<ul style="list-style-type: none">- Good quality illustrations, clear images, text is easy to read- means of visualization of information are used (tables, diagrams, graphs, etc.	till 4 points
3	Design and customization	<ul style="list-style-type: none">- the design of the slides corresponds to the theme, does not interfere with the perception of the content, the same design template is used for all presentation slides.	till 2 points
4	Content	<ul style="list-style-type: none">- the presentation reflects the main stages of the research (problem, goal, hypothesis, progress, conclusions, resources.- contains complete, understandable information on the topic of work- spelling and punctuation literacy	till 6 points
5	Performance requirement	<ul style="list-style-type: none">- the speaker is fluent in the content, presents the material clearly and competently- the speaker answers questions and comments from the audience freely and correctly	till 6 points

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	- the speaker strictly fits within the framework of the regulations	
Maximum score		20 points

Evaluation criteria for notes:

- the **"excellent"** rating is given to the student if the completeness of the use of educational material, the logic of presentation (the presence of schemes, the number of semantic connections between concepts), clarity (the presence of drawings, symbols, etc.; accuracy of execution, readability of the summary, literacy (terminological and spelling);
- the **"good"** rating is given to the student if the use of educational material is not complete, it is not sufficiently logical to present (the presence of schemes, the number of semantic connections between concepts), clarity (the presence of drawings, symbols, etc.; accuracy of execution, readability of the summary, literacy (terminological and spelling), lack of related sentences;
- the **"satisfactory"** rating is given to the student if the use of educational material is not complete, it is not sufficiently logical to present (the presence of schemes, the number of semantic connections between concepts), clarity (the presence of drawings, symbols, etc.; accuracy of execution, readability of the summary, literacy (terminological and spelling), lack of independence during compilation can be traced;
- the **"unsatisfactory"** rating is given to the student if the use of educational material is not complete, there are no schemes, the number of semantic connections between concepts, there is no clarity (presence of drawings, symbols, etc.; accuracy of execution, readability of the summary, terminology and spelling errors, lack of independence in drafting were made.

Evaluation criteria for Crossword:

- the score **"excellent"** is given to the student if the crossword fits successfully into any figure or image, all the words of the crossword correspond to the topic, the questions are clearly formulated, there are no spelling, grammatical and speech errors;
- the grade **"good"** is given to the student if the crossword fits enough into any figure or image, all the words of the crossword correspond to the topic, the questions are clearly formulated, spelling, grammatical and speech errors are present;
- the **"satisfactory"** rating is given to the student if the crossword does not fit into any figure or image, not all words of the crossword correspond to



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the topic, the questions are not formulated clearly enough, spelling, grammatical and speech errors are present;

- the **"unsatisfactory"** rating is given to the student if the crossword puzzle is not executed or does not fit into any figure or image, most of the words of the crossword puzzle do not correspond to the topic, the questions are not clearly formulated, spelling, grammatical and speech errors are present.

Criteria for assessing test tasks

RATING SCALE 20 QUESTIONS

- "5" - from 18 to 20 correct answers out of 20 test questions;
- "4" - from 15 to 17 correct answers out of 20 test questions;
- "3" - from 11 to 14 correct answers out of 20 test questions;
- "2" - from 0 to 10 correct answers out of 20 test questions.

RATING SCALE 15 QUESTIONS

- "5" - up to 10% errors on test questions;
- "4" - up to 20% errors on test questions;
- "3" - up to 30% errors on test questions;
- "2" - more than 30% of errors on test questions.

RATING SCALE 10 QUESTIONS

- "5" - from 9 to 10 correct answers out of 10 test questions;
- "4" - from 7 to 8 correct answers out of 10 test questions;
- "3" - from 6 to 7 correct answers out of 10 test questions;
- "2" - from 0 to 5 correct answers out of 10 test questions.

Evaluation criteria for exam:

- the **"excellent"** rating is given to the student, with the number of correct answers from 90 and above;
- the **"good"** rating is given to the student, with the number of correct answers from 76 to 89;
- the **"satisfactory"** rating is given to the student, with the number of correct answers from 60 to 75;
- the **"unsatisfactory"** rating is given to the student if he gave up to 59 correct answers inclusive.

Academic discipline policy:

- compulsory attendance at classes;
- active participation of the student in practical classes;
- preliminary preparation and completion of homework;
- high-quality and timely completion of tasks under CDS;
- participation in all types of control (current, milestone, final);



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- one lateness to classes and/or leaving before their end for any reason is considered as one missed lesson that cannot be restored;
- unacceptable: the use of cell phones during classes, deception and plagiarism, late submission of assignments, failure to comply with chain of command and rules of conduct.

Help: For advice on completing independent work (SIW/SIWT), their delivery and defence, as well as for additional information on the material covered and all other questions that arise regarding the course being taught, please contact the teacher Tuesday, Friday. at Moskovskaya, 172, office No. 413.