

SYLLABUS

INTERNATIONAL
EUROPEAN UNIVERSITY



SCHOOL OF
MEDICINE

"Medical Biology"
EPP – 222 "Medicine"

2024



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1	Name of the course and educational program
	"Medical Biology" EPP – 222 "Medicine"
2	Course description
	The study of medical biology forms in students a holistic idea of the general patterns of development of wildlife; about the essence of life, its forms, individual and historical development of the organic world and the place of man in it; about the forms of biotic relationships in nature, the life cycles of parasites and parasitic diseases of humans; about the place of man in the biosphere; provides fundamental biological training and acquisition of practical skills for the next professional activity of a general practitioner.
3	Background of study
	Medical biology is based on the knowledge of general biology, human, animal, and plant biology previously obtained by students at an educational institution of the pre-university level of education.
4	Amount of credits/hours
	5 ECTS credits / 150 academic hours
5	Training format
	Blended learning
6	Classroom Location
	4th floor, 401 classroom
7	Full name of the teacher
	Morozov-Leonov Svyatoslav , Doctor of Biological Sciences, Associate Professor of the Department of Fundamental and Medical-Preventive Disciplines
8	Pulpit
	Department of Fundamental and Medical-Preventive Disciplines of the Scientific Research Institute "EMS"
	
9	Office Location
	Kyiv, Akademika Glushkova Ave., 42 V, office. 423



SYLLABUS



10	Counseling
Thursday from 14:00 to 15:30 with prior registration via corporate mail	
11	Teacher's e-mail
sviatoslavmorozov-leonov@ieu.edu.ua	
12	Course Objectives
Formation of students' scientific worldview on medical and biological aspects of life the ability to analyze information and acquire modern knowledge of medical biology and determine the place of its components in the general system of knowledge about nature and medicine.	
13	The role of the academic discipline in achieving program results
PLO 1. Have thorough knowledge of the structure of professional activity. Be able to carry out professional activities that require updating and integration of knowledge. Be responsible for professional development, the ability to further professional training with a high level of autonomy PLO 2. Understanding and knowledge of basic and clinical biomedical sciences, at a level sufficient to solve professional problems in the field of health care PLO 3. Specialized conceptual knowledge, including scientific achievements in the field of health care and is the basis for research, critical reflection on problems in the field of medicine and related interdisciplinary problems. PLO 10. Determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, observing the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. PLO 21. To search for the necessary information in professional literature and databases of other countries, to analyze, evaluate and apply this information PLO 23. Assess the impact of the environment on human health to assess the state of morbidity of the population.	
14	Learning outcomes
Upon completion of the course, applicants should know: - determining the necessary list of laboratory and instrumental studies and evaluating their results; - features of the structure of complex compounds as a basis for their use in chelation therapy; - characteristics of the quantitative composition of solutions; - quantitative content of acids and bases in the solution using acid-base titration methods; - mechanism of action of buffer systems and their role in maintaining acid-base balance in biosystems; - relationship between colligative properties and concentration of solutions; - thermal effects of chemical and biochemical processes; - thermodynamic functions to assess the directionality of processes, to explain energy conjugation in living systems; - dependence of reaction rate on concentration and temperature; - conditions for the formation and dissolution of precipitates, explain the role of heterogeneous equilibria with the participation of salts in the general homeostasis of the body; - mechanism of formation of electrode potentials; - features of the structure of the surface layer of adsorbed molecules of surfactant compounds, principles of the structure of biological membranes; - adsorption equations and limits of their use;	



SYLLABUS



14

Learning outcomes

- regularities of adsorption of substances from solutions on a solid surface;
- physicochemical foundations of adsorption therapy methods;
- principles of methods for obtaining and purifying colloidal-dispersed solutions;
- physical and chemical properties of proteins, which are structural components of all tissues of the body.

15

Course Content

Topic 1. Introduction to the Medical Biology Course. Optical systems in biological research. Levels of organ-Living Things

Topic 2. Cell morphology. Structural components of the cytoplasm and nucleus Structural and functional organization of the eukaryotic cell

Topic 3. Cell membranes. Transport of substances through the plasmalemma The cell as an open system Topic 4. Core. Morphology of chromosomes. Human karyotype

Topic 5. Molecular bases of heredity. Characteristics of nucleic acids. Topic 6. The structure of the pro- and eukaryotic gene

Topic 7. Organization of the flow of information in the cell Regulation of gene expression. Molecular mechanisms of human variability

Topic 8. Life cycle and cell division. Mitosis. Meiosis.

Topic 9. Features of human genetics. Mono-, di- and polyhybrid crosses. Mendelian characteristics of a person

Topic 10. Interaction of allelic and non-allelic genes. Pleiotropy. Genetics of blood groups Topic 11. Chromosomal theory of heredity. Linked inheritance. Genetics of sex.

Topic 12. Variability in humans as a property of life and a genetic phenomenon: phenotypic and genotypic variability

Topic 13. Fundamentals of medical genetics. Methods for studying human heredity. Topic 14. Cytogenetic method. Chromosomal diseases

Topic 15. Biochemical method and DNA diagnostics.

Topic 16. Population-statistical method. Medical and genetic counseling. Topic 17.

Biological features of human reproduction. Gametogenesis. Fertilization.

Topic 18. Features of the prenatal period of human development. Disorders of ontogenesis and their place in human pathology. Molecular genetic mechanisms of ontogenesis.

Topic 19. Postnatal period of human ontogeny.

Topic 20. Biological mechanisms for maintaining the homeostasis of the body.

Topic 21. Medical and biological foundations of parasitism. Medical Protozoology. Subkingdom Protozoa (Protozoa). Phylum Sarcomastigophora (Sarcomastigophora). Class True amoebas (Lobosea). Phylum Ciliophora. Representatives of the class Slit-mouthed (Rimostomatea) are human parasites.

Topic 22. Representatives of the class Animal flagellar (Zoomastigophorea) are human parasites.

Phylum Apicomplexa (Apicomplexa). Representatives of the class Sporozoa are human parasites

Topic 23. Medical helminthology. Phylum Flatworms (Plathelminthes). Class Flukes (Trematoda) are causative agents of human diseases.

Topics 24-25. Phylum Flatworms (Plathelminthes). Class Cestoidea – causative agents of human diseases

Topics 26-27. Phylum Roundworms (Nemathelminthes). Class Actual roundworms (Nematoda) are causative agents of human diseases. Methods of laboratory diagnosis of helminthiasis.

Topic 28. Medical arachnoentomology. Phylum Arthropoda (Arthropoda). Class Arachnoidea. Ticks (Acarina) are pathogens and carriers of human pathogens. Poisonous arachnids.

Topic 29. Class Insects (Insecta). Cockroaches (Blattoidea). Diptera (Diptera) – pathogens and vectors of human pathogens

15 Course Content

Topic 30. Class Insects (Insecta): lice (Anoplura), fleas (Aphaniptera), bedbugs (Hemiptera) - pathogens diseases and carriers of human pathogens.

Topic 31. Synthetic theory of evolution. Population structure of humanity. The origin of man. Phylogeny is the system of vertebrate organs.

Topic 32. Biosphere as a system for ensuring human existence.

16 Books and materials

1. Medical biology: textbook / Ed. V. P. Pishaka, Y. I. Bazhory. Textbook / Edition 4, revised bleed and complemented. – Vinnytsia: New Book, 2021. – 608 p. (in Russian).

2. Medical Biology: Textbook for Students. honey. institutions of higher and professional pre-higher education / R.O. Sabadyshyn, S.E. Bukhalska. – 3rd ed., with changes and additions. – Vinnytsia: New Book, 2020. -344 p.: ill. Pavlichenko V.I., Pishak V.P., Bulyk R.E. Fundamentals of Molecular Biology: Textbook. – Chernivtsi: Med University, 2012. – 388 p.; Il.

17 Technical requirements for working on the course

To work during the study of the discipline "Medical Biology" you need regular access to computer (or phone) and the Internet. The classroom for teaching the course is equipped with microscopes, sets of necessary drugs.

To successfully study and pass the exam for the training course, you must first familiarize yourself with the distance platform (Classroom or Moodle) and study all the folders on which there is already / or will be placed in stages information or materials for studying the course. You will also need to upload and create documents, upload a completed task, watch a video or create one.

The ability to use remote platforms is possible only with the use of corporate mail.

If it is impossible to enter the course, you need to inform the management of the ESI EMS, or the headman, or directly the course teacher.

18 Learning process

The process of studying the course "Medical Biology" includes lectures and practical classes.

During lectures, teaching methods such as lecture will be used; problem-oriented lecture, lecture-conversation, lecture-discussion, method of illustrations, analysis of cases in accordance with the topic of lectures.

During practical classes, such teaching methods as surveys, testing, individual and team tasks, cases, think-pair-share, preparation of reports and presentations, work in small groups, solved specific tasks and situations, brainstorming (brainstorming, brainstorming), work with the interactive platform Labster will be used.





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19 Signs of discipline

Term of teaching	Semester	International Disciplinary Integration	Course year (training)	Cycles: General Training/ Professional Training/ Free Choice
2 semesters	1.2 semester	yes	1 year	General training cycle

20 Grading Policy

Assessment of knowledge and skills during the semester is possible in various ways. The teacher evaluates attending classes, being active during a lecture or practical lesson, discussing problematic issues, quality and timely completion of tasks and tests, the ability to present one's report, performing independent work.

Activities during the semester	Maximum number of points during the semester
Current work (attendance, oral survey, participation in discussion) (10 during the course)	20 (2x10)
Solving situational problems (10 during the semester)	50 (5x10)
Presentations (4 during the course)	20 (5x4)
Tests (10 during the semester.)	50 (5x10)
Labster Interactive Platform (3 works)	60 (3x20)
Together	200

21 Grading scale

The maximum number of points for the discipline is 200 points. The ratio between the results of the assessment of current educational activities and the final control of knowledge is 60% and 40%.

The study of the discipline ends with a final control in the form of an exam.

Only those students who do not have academic debt (all missed classes have been worked out) and their average score for current academic activities in the academic discipline is not less than a grade of "3" are allowed to take the exam.

The maximum number of points that a student can score for the current educational activity for admission to the exam is 120 points and is determined as the sum of the arithmetic mean of all grades received in the semester.

The minimum number of points that a student must score for the current educational activity for admission to the exam is 72 points. Recalculation of the average grade for current performance (on a 120-point scale) in Table. 1. (Table. 1. Regulations on the organization of educational activities).

The maximum number of points that a student can score when passing the exam is 80 (the minimum number is at least 50). The grade in the discipline is determined comprehensively, as the sum of points for current educational activities and points for the exam.

Of the allocated 120 points for current educational activities for the assessment of individual independent work of higher education applicants, according to the working curriculum, an additional 4 to 12 points are allocated. Incentive points are added to the final grade in the discipline at the end of its study. Points in the discipline for students who have successfully completed the program are converted to the national scale and the ECTS system.

21

Grading scale

Sum of points for all types of learning activities	ECTS assessment	National scale score	
		For the sake of clarity, diffusion	For the sake of credit
180-200	And	Perfectly	Enrolled
160-179	Into	Well	
150-159	C		
130-149	D	Satisfactory	
120-129	E		
50-119	FX	unsatisfactory with the possibility of retaking	not enrolled with the possibility of retaking
0-49	F	unsatisfactory with the obligatory re-study of the discipline	not enrolled with mandatory re-study of the discipline



22

How to find out your score

To check your grades for assignments and read the teacher's comments, you should check the relevant tabs of the Classroom or Moodle distance learning platforms.

You can also get information about the grades received directly from the course teacher through corporate mail or by appointment on the days of consultations (room 423).

23

Course Policy

For productive educational and cognitive activities of students when studying the discipline, topical lectures are carried out in the form of presentations, group work, seminars-discussions.

During the stay on the territory of the IEU and in classes, the student must respect teachers, staff and other students, attend classes according to the schedule, come on time and not leave the classroom without the permission of the teacher. It is necessary to complete all academic tasks and work within the specified deadlines.

The teacher, in turn, must constantly improve his professional level, pedagogical skills, general culture, provide conditions for students to master curricula at the level of mandatory requirements for the content, level and scope of education, promote the comprehensive professional development of students. It is imperative to adhere to the curriculum, not to be late for classes, to prevent any manifestations of corruption, discrimination, bullying, harassment and infringement of the rights of students.

A student who, for valid reasons, confirmed by documents, was not subject to current control, has the right to undergo current control within two weeks after returning to study.

A student who was absent from classes without a valid reason, did not participate in current control measures, did not liquidate academic debts, is not allowed to the final semester control of knowledge in this discipline, and on the day of passing the exam in the exam sheet, the scientific and pedagogical worker gives a grade of



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"not allowed". Re-passing the exam in discipline is appointed under the condition of performing all types of educational, independent (individual) work provided for by the working curriculum of the discipline, and is carried out in accordance with the liquidation schedule approved by the Directorate.

All participants in the educational process are guided by the principles of academic integrity.



24

Completing the task late, correcting grades, working out

Assignments must be submitted via Classroom or Moodle before the completion deadlines specified in the course schedule on our website. Most of the tasks must be completed by 09:00 on the day of the next lesson in order to align them with the content of the course and activities in the group. It is best practice to complete the assignment as soon as possible after receiving it so that you have enough time to actively participate in the class.

If you need more time to complete a task, flexible deadlines are available. Completed assignments are accepted for full credit until the last lesson in the discipline according to the schedule, after which a 40% partial credit based on the grade received will be awarded within a week after the last day of classes. Tasks that did not pass at all will receive 0.

If you plan to miss classes for more than one week due to illness or other reasons, please contact your instructor to arrange alternative assignment options.

Remember that deadlines work both ways, and meeting them will ensure that the instructor provides timely feedback on your assignments to ensure that you keep up with the course.



25

Teacher's response time

Through corporate mail, within a week.

26

Effective communication

Effective communication is not only about being able to speak, but also about being able to hear!!

Therefore, the main recommendations for effective communication are corporate e-mail directly with the course teacher; this is personal communication with classmates through social networks/corporate mail/mobile phones; this is communication directly on the course of distance platforms Classroom or Moodle; This is a face-to-face meeting with the teacher on the days of consultations.



SYLLABUS



27 Course Materials Publication and Distribution Policy

Students may not post, publish, sell, or otherwise publicly distribute course materials without the written permission of the instructor!

Such materials include, but are not limited to: lecture notes, lecture slides, video or audio recordings, assignments, problem sets, exams, other students' papers, and answer keys.

Students who sell, post, publish, or distribute course materials without written permission for the purpose of obtaining answers or otherwise may be subject to disciplinary action, up to and including a requirement to opt out. In addition, students may not make video or audio recordings of classes for their own use without written permission from the instructor.

28 Expected workload and student engagement

For work in this course, hours are necessarily provided for independent study of materials and preparation for practical classes (approximately 5-6 hours per week).

If circumstances arise that force you to spend more time on any of the tasks, inform the teacher by e-mail.

An extension of the deadline is possible only if the teacher is informed in advance that you will not be able to submit the assignment on time. Students are expected to have a backup plan in case of computer malfunction or Internet outages.

29 Support

Electronic timetable

Library Repository

Directorate of ESI

EMS

30 Course Schedule

Title of the lecture topic	Practical classes
Introduction to the Medical Biology Course. Structural and functional organization of the cell. Cell morphology. Structural components of the nucleus and cytoplasm.	1. Oral Survey 2. Practical tasks 3. Tests
Organismal level of organization of genetic information. Gene interaction. Chromosomal theory of heredity. Variability in humans as a property of life and a genetic phenomenon	1. Oral Survey 2. Practical tasks 3. Tests 4. Situational tasks
Fundamentals of Human Genetics. Methods for studying heredity. Human chromosomal diseases	1. Oral Survey 2. Practical tasks 3. Tests 4. Labster
Molecular genetic mechanisms of ontogenesis. Disorders of ontogenesis and their place in human pathology. Biological mechanisms for maintaining homeostasis	1. Oral Survey 2. Solving practical problems 3. Checking the issues that are submitted for independent study 4. Tests
Medical and biological foundations of parasitism. Protozoa are human parasites. Under the kingdom of Protozoa. Type Sarcophagella. Class True amoebas	1. Oral Survey 2. Solving practical problems 3. Presentation of reports



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		4. Labster
Medical helminthology. Flatworms and roundworms are human parasites	1. Oral Survey 2. Solving practical problems 3. Presentation of reports	
Medical arachnoentomology. Arthropods are pathogens and carriers of infections and invasions	1. Oral Survey 2. Tests 3. Labster	
Synthetic theory of evolution. Features of the action of evolutionary factors in human populations. The biosphere as a system that ensures human existence. Human ecology	1. Oral Survey 2. Practical tasks 3. Tests 4. Evaluation of presentations	

31

Tips for successful study in the course

Tell me - and I will forget, teach me - and I can remember, involve me - and I will learn, said Benjamin Franklin.

If you want to successfully master this subject, you must be:

- persistent, attentive and inquisitive;
- creative and cheerful, open to communication and discussion;
 - ready to receive and share information on the subject not only at lectures, but also in extracurricular time.

See you!



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