

SYLLABUS

INTERNATIONAL EUROPEAN
UNIVERSITY



SCHOOL OF
MEDICINE

HISTOLOGY, CYTOLOGY
AND EMBRYOLOGY

2023



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Course Name				
		HISTOLOGY, CYTOLOGY AND EMBRYOLOGY		
Lecturer (s)				
		Hryhorii Kostynskyi, Doctor of Medical Science, professor Larysa Bidna, PhD in Biology, associate professor		
Lecturer's profile				
		https://medicine.ieu.edu.ua/pro-yemsh/kafedry/ kafedra-fundamentalnykh-dystsyplin		
Consultations				
online consulting		First Tuesday of the month, 3 p.m. – 4 p.m.		
offline consulting		Third Friday of the month, 3 p.m. – 4 p.m.		
Contact number				
		+380507542058		
E-mail				
		grygoriikostynskyi@ieu.edu.ua larysabadna@ieu.edu.ua		
Discipline page				
		https://medicine.ieu.edu.ua/pro-yemsh/kafedry/ kafedra-fundamentalnykh-dystsyplin		
Form of final control		test	def. test	exam
		☐	☐	☐



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1 Brief discipline annotation

Histology, cytology and embryology lays the foundation for further acquisition of program learning outcomes according to the Higher Education Standard of Ukraine for pre-graduation training of specialists of the second (Master) level in the Medicine specialty.

2 Background for studying discipline

Histology, cytology and embryology is based on the knowledge of medical biology and anatomy, as well as is integrated with these disciplines. It lays the foundation for studying physiology, biochemistry, pathological anatomy and pathological physiology, propaedeutics of clinical disciplines.

3 Goal and objectives of the discipline

The goal of the academic discipline follows from the goals of educational and professional training program for graduates of higher education institutions and is determined by the content of systemic knowledge and skills that should be mastered by a doctor. The knowledge obtained by students in the academic discipline is basic for the block of disciplines providing natural science (NS block) and professional and practical (PP block) training.

Objectives:

- to study molecular and structural bases of functioning and repair and derivatives of cells;
- to study the basics of adaptation, reactivity and homeostasis maintenance;
- to determine adaptation and regenerative capabilities of organs taking into account their tissue composition, particularities of regulation and age-related changes;
- to interpret the regularities of human embryonic development, regulation of morphogenesis processes;
- to determine critical periods of embryogenesis, defects and anomalies of human development.

4 Learning outcomes

PLO 1.	To have comprehensive knowledge of the structure of professional activities. To be able to carry out professional activities requiring updating and integration of knowledge. To be responsible for professional development, ability to further professional training with a high level of autonomy.
PLO 2.	To understand and know fundamental and clinical biomedical sciences at the level sufficient to solve professional tasks in the healthcare sector.
PLO 3	Specialized conceptual knowledge that includes healthcare scientific achievements and is the foundation for research; critical comprehension of medical issues and related interdisciplinary problems.
PLO 4	To distinguish and identify principal clinical symptoms and syndromes (according to list 1); to define a provisional clinical diagnosis (according to list 2) using standard techniques, preliminary data on patient's medical history, data on patient examination, knowledge of human beings, their organs and systems.
PLO 21.	To find necessary information in professional literature, databases and other sources; to analyze, assess and apply this information.



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ECTS credits

9 ECTS credits / 270 hours, including 40 hours of lectures, 105 hours of practical classes, 125 hours of independent work.

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Course Content

Content sections and topics	Amount of hours			
	total	including		
		l	l	i.w.
SECTION I. Cytology, content section 1.				
Topic 1. Microscope. Microscopic tools. Histological techniques.	8	1	3	4
Topic 2. Cytology. General organization of cells. Surface complex.	8	1	3	4
Topic 3. Structure and functions of cytoplasm.	7	-	3	4
Topic 4. Nuclear apparatus of cells. Cell reproduction. Aging and death of cells	7	-	3	4
SECTION II. Human embryology, content section 2.				
Topic 5. Foundations of biology development. General embryology. Human embryonic development. Fertilization, fragmentation.	6	-	3	3
Topic 6. Human embryonic development. Structure and functions of amnion, chorion, placenta and umbilical cord. Gastrulation.	8	2	3	3
SECTION III. General histology, content section 3.				
Topic 7. Introduction to general histology Epithelial tissues.	8	1	3	4
Topic 8. Blood. Hemogram. Erythrocytes. Platelets.	7	1	3	3
Topic 9. Leukocytes. Leukocyte formula. Lymph.	6	-	3	3
Topic 10. Connective tissues.	7	-	3	4
Topic 11. Cartilage and bone tissues: classification, development, structure and functions.	7	-	3	4
Topic 12. Muscle tissues: classification, development, structure and functions.	8	1	3	4
Topic 13. Nervous tissues.	8	1	3	4
SECTION IV. Specialized histology, content section 4.				
Topic 14. Cardiovascular system (I). Arteries, vessels, HMCSR.	8	1	3	4
Topic 15. Cardiovascular system (II). Veins.	7	1	3	3
Topic 16 Lymphatic vessels, heart	7	-	3	4
Topic 17. Blood and immune defense organ system.	8	1	3	4
Topic 18. Peripheral blood forming and immune defense organs.	8	1	3	4
Topic 19. Central organs of the endocrine system.	8	1	3	4
Topic 20. Peripheral organs of the endocrine system.	7	1	3	3
Topic 21. Digestive system. General plan of the structure of the digestive tube. Particularities of the structure of the oral mucosa.	7	1	3	3
Topic 22. Tooth structure and its development.	6	-	3	3
Topic 23. Structure of esophagus, stomach, thin and thick intestines.	7	-	3	4
Topic 24. Structure of salivary glands.	6	-	3	3
Topic 25. Structure of liver and pancreas.	7	-	3	4
Topic 26. Respiratory system. Skin and its derivatives.	6	-	3	3
Topic 27. Urinary system.	8	1	3	4
Topic 28. Male reproductive system.	7	1	3	3
Topic 29. Female reproductive system (I).	8	1	3	4
Topic 30. Female reproductive system (II).	6	-	3	3
Topic 31. Organs of the peripheral nervous system.	8	1	3	4
Topic 32. Organs of the central nervous system.	7	1	3	3
Topic 33. Organ of vision and smell.	7	-	3	4
Topic 34. Organ of hearing	6	-	3	3
Topic 35. Organ of hearing, balance and taste.	6	-	3	3
TOTAL PER DISCIPLINE	270	40	105	125



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List of obligatory tasks

Microscope. Microscopic tools. Histological techniques.
Cytology. General organization of cells. Surface complex. Cytology. Structure of cytoplasm.
Cytology. Nuclear apparatus of cells.
Cytology. Reproduction cells. Aging and death of cells. General embryology. Embryonic development of chordates, lower and higher vertebrates.
Human embryonic development. Structure and functions of amnion, chorion, placenta and umbilical cord.
Epithelial tissues.
Blood and lymph. Hematopoiesis.
Connective tissues.
Cartilage and bone tissues.
Muscle tissues.
Nervous tissues.
Nervous system.
Organs of hearing
Cardiovascular system
Blood forming and immune defense organs.
Endocrine system.
Digestive system.
Skin and its derivatives.
Respiratory system.
Urinary system.
Male reproductive system.
Female reproductive system.
Morbidity in domestic health care facilities.

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List of selective tasks

1. Creation of multimedia presentations on topics of practical classes
2. Creation of histological crossword puzzles on topics of practical classes
3. Making tables
4. Participation in the work of the student scientific group
5. Participation in the student competition in the discipline.
6. Participation in student scientific conferences
7. Organizing and visiting thematic museums
8. Publication of key points of presentations from scientific conferences co-authored with the lecturer

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Discipline features

Period of teaching	Semester	International disciplinary integration	Year of study	Courses: general training/ professional training/elective
2 semester	3 - 4	available	2	General training



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10 Assessment system and requirements. General system of discipline assessment

Current student performance is assessed according to the 4-point scale (2; 3; 4; 5) during every practical class given the approved assessment criteria for a corresponding discipline. Students should obtain a grade in each topic for further conversion of grades into points due to the multi-point (200-point) scale.

Assessment criteria of current learning activities:

Excellent (5) – students answer correctly to 90-100% of A-format tests (from the Krok-2 database); solve case problems and can generalize the material.

Good (4) – students answer correctly to 70-89% of A-format tests; have necessary practical skills and techniques of their performance in the volume exceeding the required minimum.

Satisfactory (3) – students answer correctly to 50-69% of A-format tests; have an obligatory minimum of research methods.

Failure (2) – students answer correctly to 50% of questions, make significant, serious mistakes while answering and showing practical skills.

Students' independent work related to preparations for practical classroom activities is assessed during current control of a topic during a corresponding class.

A semester Pass/Fail test is assessed due to the two-point scale (Pass/Fail) and 200-point scale by defining the arithmetic average of current grades for each practical class due to the 4-point scale and by its further conversion into points of the 200-point scale. Minimum amount of points that should be obtained by students: 120.

The final control of knowledge in the Histology, cytology and embryology discipline is conducted in the form of an exam. The exam is conducted in the form of a written test work with individual options, each one containing 3 theoretical questions.

<https://ieu.edu.ua/docs/rate-of-study.pdf>

11 Assessment system and requirements. General system of discipline assessment

Students who accomplish all types of works, tasks prescribed by the curriculum for the semester according to the academic discipline, attend all classes stipulated by the curriculum, prepare a medical history and have the average grade of at least 3 (72 points according to the 120-point scale) for current learning activities are admitted to the semester final control.

<https://ieu.edu.ua/docs/rate-of-study.pdf>

12 Admission to final control

Teaching of the discipline is based on various models of class activities aimed at increasing the level of students' interest in the course, providing theoretical and practical knowledge of the discipline.

To activate students' learning and cognitive activity, one holds problem-based lectures, presentations, cases, work in small groups and discussion seminars using multimedia software and hardware as well as medical equipment operations, microscopes in particular.

Working on tasks gives students the opportunity to discover their own potential, learn to trust their partners, develop intelligent teamwork skills and master the learning material.

Basic principles for conducting classes: openness to new and unconventional ideas, tolerance, friendly partner atmosphere of mutual understanding and assistance.

During classes, students should exclude the possibility of using a mobile phone, tablet or other mobile devices, should not resort to cheating and plagiarism, should respect the cooperation and solidarity of the lecturer and students, contact the lecturer to help organize and advise on scientific, search and research activities, take part in scientific groups, perform all tasks stipulated by the curriculum, should not be late for classes and not miss classes, as well as should come to classes dressed in a medical gown.

12 Admission to final control

The lecturer should ensure full implementation of the educational and topical plan, not be late for lectures, practical (seminar) classes, objectively assess the knowledge and practical skills of students, not allow any manifestations of corrupt activities, monitor the histology classroom and other classrooms, pay special attention to students during practical classes when working with equipment and microscopes. Prejudiced attitude and discrimination regardless of the race, ethnic origin and religious beliefs are not allowed.

13 Discipline policy

- the discipline is based on team spirit, cooperation and solidarity of the lecturer and students
- academic issues are discussed in the form of a discussion between the lecturer and students and students among themselves
- holding lectures and practical classes, except for the final control of knowledge, involves independent work of students using information technologies and means of processing, storage and transmission of information, including computers, personal gadgets and other electronic devices, as well as textbooks, guides, methodical materials, etc.
- scientific exploration and research work of students
- study also includes participation in the project, conducting research and writing a scientific publication in the list of obligatory tasks
- writing abstracts on topics given in the list of selective tasks is desired and obligatory if students want to improve their grade
- topics of the academic discipline is considered in terms of their practical application and bioethical capability
- mutual behavior of the lecturer and students and students among themselves in and out of class time complies with generally accepted norms and role models of behavior, stipulating mutual respect and collegial nature of relationships, and excludes religious, racial, ethnic, cultural, age, gender, social, political and other prejudices, as well as bullying, sexual harassment and other manifestations and forms of intolerance and humiliation of human dignity.
- any manifestations of corruption in the educational process, both on the part of lecturers and students, are unacceptable.

14 Policy of absence and late task performance

Students who miss the current control for valid reasons confirmed by documents have the right to take current control within two weeks after returning to studying.

Students who have missed classes without valid reasons, have not participated in current control activities, have not liquidated academic failure are not admitted to the final semester control of this discipline. In this case, an academic staff member puts a mark 'non-admission' in the exam record.

Repeated taking of the exam in the discipline is appointed in case of accomplishing all types of educational, independent (individual) work stipulated by the working program of the academic discipline and is carried out according to the approved schedule of academic failure liquidation.

<https://ieu.edu.ua/docs/050.pdf>



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15 Policy of absence and late task performance

Participants of the educational process rely on the academic integrity principles
<https://ieu.edu.ua/docs/011.pdf>

16 Recommended sources of information

Primary literature:

1. Histology. Cytology. Embryology : textbook / edited by: O.D. Lutsyk, Y.B. Tchaikovskiy. – Vinnytsia: Nova Knyha, 2018. – 592 p.
2. Histology, cytology and embryology (Atlas for independent work students) / Y.B. Tchaikovskiy, L.M. Sokurenko, H.B. Kostynskiy, O.Y., Maievskiy; ed. by L.M. Sokurenko . – Kyiv, 2020. – 152 p.
3. Human histology / [Lutsyk O.D., Ivanova A.Y., Kabak K.S., Tchaikovskiy Y.B.]. - Kyiv: Book Plus, 2010. - 584 p.

Additional literature:

1. Bulletin of Taras Shevchenko Kyiv National University. Series: Biology.
<http://biovestnik.com/index.php/biology>
2. Bulletin of Kharkiv National University. Series: Biology.
<http://ibhb.chnu.edu.ua/biosystem>
3. Bulletin of problems of biology and medicine: <https://vpbm.com.ua/ua/>

16 Tips on successful study during the course

If you want to be successful in this discipline, you need to:

1. Be active, persistent, inquisitive, consistent
2. Be neat and polite
3. Systematically prepare for practical classes
4. Perform tasks for independent work and defend them in class.
5. To be present in the classroom in a medical gown
6. To solve tests and tasks independently, to work actively in class.
7. Prepare presentations and crossword puzzles in the discipline. Participate in student scientific conferences and engage in research work in the department's scientific circles.

I wish you perseverance, dedication and motivation to learn. And then success will come to you! See you in class!

Don't forget your medical gowns!