

# SYLLABUS

---

INTERNATIONAL EUROPEAN  
UNIVERSITY



SCHOOL OF  
MEDICINE

HYSTOLOGY, CYTOLOGY  
AND EMBRYOLOGY

2023




# SYLLABUS




Discipline 

 Hystology, Cytology and Embriology

Teacher(s) 

 Doctor of Medical Sciences, Professor Kostynskyi Hryhorii Borysovykh  
Candidate of Biological Sciences, Associate Professor. Bidna Larysa Pavlivna

Profile of the teacher(s) 

 <https://medicine.ieu.edu.ua/pro-yemsh/kafedry/kafedra-fundamentalnykh-dystsyplin>

Consultations

Face-to-face consultations  First Tuesday of the month from 15:00 to 16:00

Online consultations  Third Friday of the month from 15:00 to 16:00


Contact phone number 

 +380507542058

E-mail 

 grygoriikostynskyi@ieu.edu.ua  
larysabidna@ieu.edu.ua

Discipline page 

 <https://medicine.ieu.edu.ua/pro-yemsh/kafedry/kafedra-fundamentalnykh-dystsyplin>

Form of final control

Test	Differentiated test	Exam
------	---------------------	------





# SYLLABUS



## 1 Brief annotation of the discipline

"Histology, Cytology and Embryology" lays the foundation for the formation of the following programmatic learning outcomes in accordance with the Standard of Higher Education of Ukraine for undergraduate training of specialists of the second (master's) level of the specialty "Medicine".

## 2 Prerequisite for studying the discipline

"Histology, Cytology and Embryology" is based on students' study of medical biology and anatomy and is integrated with these disciplines; it lays the foundation for students to study physiology, biochemistry, pathological anatomy and pathological physiology, and propedeutics of clinical disciplines.

## 3 Purpose and objectives of the discipline

The purpose of the discipline follows from the objectives of the educational and professional program of training of graduates of a higher education institution and is determined by the content of the systemic knowledge and skills that a doctor must master. The knowledge that students receive from the discipline is basic for the block of disciplines that provide natural science (block NS) and professional and practical (block PP) training.

Objectives:

- Study of molecular and structural bases of functioning and recovery of cells and their derivatives
- Study the basics of adaptation, reactivity and homeostasis maintenance
- Determination of adaptive and regenerative capabilities of organs taking into account their tissue composition, peculiarities of regulation and age-related changes
- Interpretation of patterns of human embryonic development, regulation of morphogenesis processes
- Determination of critical periods of embryogenesis, defects and anomalies of human development

## 4 Learning Outcomes

<b>PLO 1</b>	Have a 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
<b>PLO 2</b>	Understanding and knowledge of basic and clinical biomedical sciences, at a level sufficient to solve professional problems in the field of health care.
<b>PLO 3</b>	Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical thinking of problems in the field of medicine and related interdisciplinary issues.
<b>PLO 4</b>	Select and identify the leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data from the patient's history, examination of the patient, knowledge of the person, his/her organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).
<b>PLO 21</b>	Find necessary information in professional literature and databases of other sources, analyze, evaluate and apply this information.



# SYLLABUS



5

ECTS Credits

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

6

Structure of the discipline

Titles of content sections and topics	Number of hours			
	total	Among them		
		l.	pr.	in d.
<b>SECTION I. "Cytology", substantive section 1.</b>				
Topic 1: Microscope. Microscopic devices. Histological technique.	8	1	3	4
Topic 2: Cytology. General organization of the cell. Surface complex.	8	1	3	4
Topic 3. Structure and function of the cytoplasm.	7	-	3	4
Topic 4. Nuclear apparatus of the cell. Cell reproduction, aging and death.	7	-	3	4
<b>SECTION II. "Human embryology", substantive section 2.</b>				
Topic 5. Fundamentals of developmental biology. General embryology. Embryonic human development. Fertilization, division.	6	-	3	3
Topic 6. Human embryonic development. Structure and functions of the amnion, chorion, placenta and umbilical cord. Gastrulation	8	2	3	3
<b>SECTION III. "General histology", substantive section 3.</b>				
Topic 7: Introduction to general histology. Epithelial tissues.	8	1	3	4
Topic 8. Blood. Hemogram. Erythrocytes. Platelets.	7	1	3	3
Topic 9: White blood cells. Leukocyte formula. Lymph	6	-	3	3
Topic 10. Actually 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 function.	8	1	3	4
Topic 13. Nervous tissue.	8	1	3	4
<b>SECTION IV. "Special histology", substantive section 4.</b>				
Topic 14: Cardiovascular system (I) Arteries, vessels of the GMDC	8	1	3	4
Topic 15. Cardiovascular system (II) Veins	7	1	3	3
Topic 16 Lymphatic vessels, heart	7	-	3	4
Topic 17. Central organs of hematopoiesis and immune defense	8	1	3	4
Topic 18. Peripheral organs of hematopoiesis and immune defense	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. Features of the structure of the mucous membrane of the oral cavity.	7	1	3	3
Topic 22. Structure of the tooth and its development	6	-	3	3
Topic 23: Structure of the esophagus, stomach, small and large intestine.	7	-	3	4
Topic 24. Structure of the salivary glands	6	-	3	3
Topic 25. Structure of the 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



# SYLLABUS



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. The organ of sight and smell	7	-	3	4
Topic 34. The organ of hearing,	6	-	3	3
Topic 35. The organ of balance and taste	6	-	3	3
<b>Total of the discipline</b>	<b>270</b>	<b>40</b>	<b>105</b>	<b>125</b>

## 7 List of mandatory tasks

Microscope. Microscopic devices. Histological technique.  
 Cytology. General organization of the cell. Surface complex. Cytology. The structure of the cytoplasm  
 Cytology. Nuclear apparatus of the cell.  
 Cytology. Cell reproduction. Aging and cell death. General embryology. Embryonic development of chordates, lower and higher vertebrates  
 Human embryonic development. Structure and function of the amnion, chorion, placenta and umbilical cord.  
 Epithelial tissues.  
 Blood and lymph. Hematopoiesis.  
 Connective tissues  
 Cartilage and bone tissue Muscle tissue Nervous tissue  
 Nervous system Sensory organs. Cardiovascular system  
 Organs of hematopoiesis and immune defense. Endocrine system. Digestive system.  
 Skin and derivatives.  
 Respiratory system.  
 Urinary system.  
 Male reproductive system Female reproductive system.

## 8 Selective tasks

1. Create multimedia presentations on the topics of practical classes
2. Creating histological crosswords on the topics of practical classes
3. Making tables
4. Participation in the work of the student scientific club
5. Participation in the student olympiad in the discipline
6. Participation in student scientific and practical conferences
7. Organization and visiting of thematic museums
8. Publication of abstracts of scientific conference reports in co-authorship with a teacher
  1. Publication of abstracts of scientific conference reports in co-authorship with a teacher

## 9 Signs of discipline

Term of Teaching	Semester	International disciplinary integration	Course (year of study)	Cycles: general training/ vocational training/ free choice
2 semester	III, IV	Yes	2st	General training

## 10 Grading System and Requirements

The current performance of students is assessed on a 4-point scale (2; 3; 4; 5) at each practical, taking into account the approved evaluation criteria for the relevant discipline. The student must receive a grade for each topic for further conversion of grades into points on a multi-point



# SYLLABUS



(200-point) scale.

Criteria for assessing current academic performance:

Excellent ("5") - the student answered 90-100% of the questions correctly. Solves situational problems of increased complexity, is able to summarize the material.

Good ("4") - the student answered 70-89% of the questions correctly. Possesses the necessary practical skills and techniques for their implementation in excess of the required minimum.

Satisfactory ("3") - the student answered 50-69% of the questions correctly. Has only the required minimum of research methods.

Unsatisfactory ("2") - the student answered 50% of the questions correctly. When answering and demonstrating practical skills, he/she makes significant, gross mistakes.

Evaluation of students' independent work in preparation for classroom practical classes is carried out during the current control of the topic at the relevant classroom.

The semester credit is evaluated on a two-point scale (passed/not passed) and a 200-point scale by determining the arithmetic mean of current grades for each practical lesson on a 4-point scale and its subsequent conversion to 200-point scale. The minimum number of points that a student must score is 120.

The final control of knowledge in the discipline "Histology, Cytology and Embryology" is carried out in the form of an exam. The exam in the discipline is conducted in the form of a written test for individual options, each of which contains 3 theoretical questions.

**<https://ie.u.edu.ua/docs/rate-of-study.pdf>**

11

## Conditions of admission to the final control

Students who have completed all types of work, tasks provided for in the curriculum for the semester in accordance with the discipline, attended all classes provided for in the curriculum, written and submitted a medical history and have an average score for current academic activities of at least "3" (72 points on a 120-point scale) are allowed to take part in the semester final control.

**<https://ie.u.edu.ua/docs/rate-of-study.pdf>**

12

## Discipline Policy

Teaching the discipline involves various models of classroom work aimed at increasing students' interest in studying the course, mastering theoretical and practical knowledge of the subject.

To enhance students' learning and cognitive activity in the course of studying the discipline, problem-based lectures, presentations, case studies, small group work and seminars-discussions are held, using multimedia hardware and software and working with medical equipment, including microscopes.

Working on solving problems enables higher education students to maximize their own potential, learn to trust their partners, develop intellectual teamwork skills, and master the material.

The main principles of the classes are openness to new and extraordinary ideas, tolerance, and a friendly partnership atmosphere of mutual understanding and assistance.

During classes, students must exclude the possibility of using a mobile phone, tablet or other mobile devices, not resort to cheating and plagiarism, adhere to the cooperation and solidarity of the teacher and students, ask the teacher for help in organizing and consulting on scientific, search and research work, participate in scientific clubs, complete all tasks provided for in the curriculum, not be late or miss classes and come to class dressed in medical gowns.

The teacher, in turn, must ensure the full implementation of the curriculum, not be late for lectures, practical (seminar) classes, objectively assess students' knowledge and practical skills, prevent any manifestations of corruption, monitor the histology classroom and other classrooms where students are trained, pay special attention to students in practical classes when working with equipment and microscopes. And it is important to avoid prejudice and discrimination regardless of race, ethnicity, or religious beliefs.

13

## Policy for missing classes and completing assignments after the deadline



# SYLLABUS



A student who, for valid reasons, confirmed by documentary evidence, 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 valid reasons, did not participate in current control activities, did not eliminate academic debt, is not allowed to take the final semester control of knowledge in this discipline, and on the day of the exam, the academic staff member assigns a grade of "not admitted" in the examination record. Retaking a differentiated test in the discipline is assigned subject to the completion of all types of educational, independent (individual) work provided for by the working curriculum of the discipline and is carried out in accordance with the schedule of liquidation of academic debt approved by the directorate.

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

## 14 Academic Integrity Policy

Participants in the educational process are guided by the principles of academic integrity

<https://ieu.edu.ua/docs/011.pdf>

## 15 Recommended sources of information

### Main literature:

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

### Additional literature:

1. Bulletin of Taras Shevchenko National University of Kyiv. 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 Biology and Medicine: <https://vpbm.com.ua/ua/>

## 16 Tips for successful studying on the course

1. Be active, persistent, inquisitive, consistent
2. Be neat and polite
3. Systematically prepare for practical classes
4. Attend lectures and take notes
5. Perform tasks for independent work and defend them in class.
6. Handle the equipment of the department, including microscopes, with care.