MINISTRY OF HEALTH PROTECTION OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY
Faculty of Medicine No. 1
Department of Histology, Cytology and Embryology

Syllabus of the academic discipline
Histology, cytology and embryology

Amount	9.00 ECTS credits, 270 hours
Semester, year of study	1st semester and 2nd semester of the 1st year of study
Days, time, place	Monday - Friday from 8.30 to 16.12 The main building of ONMedU (Odesa, 4b Olhiivska Street): according to the schedule in the classrooms of the Department of Histology
Teacher(s)	Tiron Oksana Ivanivna, associate professor, candidate of sciences, head of the department of histology, cytology and embryology 0672827333 chekina . o @ ukr . net Iryna Kuvshinova Ivanivna , associate professor, Faculty of Sciences 0634161124 Irinakuvshinova.2000@gmail.com Olena Markova Olehivna , st. teacher , Faculty of Science 0682544959 alenushkamarkova71@gmail.com Breus Volodymyr Yevhenovich st. teacher 0675564787 breusve@ukr.net Lyashevska Alexandra Oleksandrivna , head of the department , assistant 0663213677 alexandra.lyashevskaya@gmail.com
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Workplace	Main building of ONMedU Odesa, str. Olhiivska , 4b
Consultations	Offline and online consultations Monday, Tuesday, Wednesday: 1st shift - 14.00 - 16.00

COMMUNICATION

Communication with graduate students and applicants are carried out through the indicated e - mail addresses and telephone numbers of teachers, the department's page in the social network, the online platform Microsoft Teams .

ABSTRACT OF THE EDUCATIONAL DISCIPLINE

The subject of the discipline is the microscopic and ultramicroscopic structure of cells, tissues and organs of the human body.

Prerequisites : Histology as an academic discipline is based on and integrated with the students' study of anatomy, medical biology, chemistry, biophysics, and Latin.

Postrequisites : Pathological anatomy, pathological physiology, immunology, ophthalmology, otolaryngology, obstetrics and gynecology, endocrinology, neurology, neurosurgery and other clinical disciplines.

The purpose of the educational discipline "Histology, cytology and embryology" is to study the microscopic and ultramicroscopic structure of the structures of the human body, their development and changes in various life conditions.

Expected learning outcomes . As a result of studying the academic discipline, the student must:

Know : - histological elements and their structural components under light and electron microscopy

- structural features and functional specialization of cells

Be able to : apply knowledge of histology, cytology and embryology in practical situations, namely:

- apply knowledge of the molecular and structural bases of functioning and regeneration of cells and their derivatives.
- interpret the basics of adaptation, reactivity and maintenance of homeostasis.
- determine the adaptive and regenerative capabilities of organs, taking into account their tissue composition, regulatory features and age-related changes.
- to interpret the patterns of human embryonic development, regulation of morphogenesis processes.
- to determine critical periods of embryogenesis, defects and anomalies of human development.

Master the skills :

1. Use of microscopic devices.
2. Diagnosis of micropreparations and electronic microphotographs according to their tissue and cellular composition.

COURSE DESCRIPTION

The course will be taught in the form:

A) lectures (30 hours);

B) practical and seminar classes (96 hours);

C) independent work of students (144 hours).

Content of the academic discipline

SUBCHAPTER 1

Topic 1. Introduction to the course of histology, cytology and embryology. Microscope, microscopic devices. Histological technique.
Topic 2. Cytology. General organization of the cell. Plasmolema . Intercellular contacts. Cytoplasm. Cell metabolism. The synthetic apparatus of the cell. Catabolism system.
Topic 3. Cytology. Cytoplasm. Cytoskeleton . Cytoprotection system and cell self-renewal. Core. Cell reproduction. Cell cycle. Mitosis. Life cycle of a cell. Differentiation. Aging. Cell death.
Topic 4. The concept of fabrics. Epithelium. Types of single-layer epithelia .
Topic 5. Multilayered and glandular epithelium.
Topic 6. Fabrics of the internal environment. Blood. Erythrocytes. Platelets. Plasma.
Topic 7. Blood. Granular leukocytes. Agranular leukocytes. Lymph. Clinical value of blood parameters. Embryonic and postembryonic hemocytopoiesis .
Topic 8. Control of learning practical skills (diagnosis of drugs) according to topics 1-7.
Topic 9. Control of assimilation of theoretical knowledge on topics 1-8.

SECTION 2

Topic 10. Connective tissue. Cells of loose fibrous connective tissue.
Topic 11. Intercellular substance. Dense connective tissue.
A connective tissue with special properties.
Topic 12. Cartilaginous tissue. Chondrogistogenesis .
Topic 13. Bone tissue. Building Connection of bones. Osteohistogenesis , bone growth and remodeling.
Topic 14. Muscle tissue. Skeletal
Topic 15. Muscle tissue. Hearty and unstriped.
Topic 16. Nervous tissue. Neurons. Neuroglia .
Topic 17. Nerve fibers and endings.
Topic 18. Control of learning practical skills (diagnosis of drugs) according to topics 10-17.
Topic 19. Control of assimilation of theoretical knowledge on topics 10-18.

SECTION 3

Topic 20. Nervous system. Spinal cord. Spinal and autonomic nerve nodes. Peripheral nerves.
Topic 21. Central nervous system. Brain: large hemispheres, cerebellum.
Topic 22. Sense organs. The organ of vision. General plan of the structure of the eyeball. Dioptric and accommodation devices of the eye. Sensor apparatus. Auxiliary apparatus of the eye.
Topic 23. Sense organs. Organ of hearing and balance.
Topic 24. Cardiovascular system. Heart. Arteries.
Topic 25. Cardiovascular system. Veins. Microcirculatory channel.
Topic 26. Central organs of hematopoiesis and immune protection.
Topic 27. Peripheral organs of hematopoiesis and immune protection.
Topic 28. Control of the acquisition of practical skills (diagnosis of drugs)
Topic 29. Control of assimilation of theoretical knowledge on topics 20-28.

SECTION 4

Topic 30. Central organs of the endocrine system.
Topic 31. Peripheral organs of the endocrine system.
Topic 32. Urinary system. Histophysiology of cortical and juxtamedullary nephrons. Endocrine apparatus of the kidney. Urinary tract.
Topic 33. Male reproductive system. Spermatogenesis. Seedlings. Additional glands of the male reproductive system.
Topic 34. Female reproductive system. Ovaries, oogenesis
Topic 35. Female reproductive system. Ovarian -menstrual cycle.
Fallopian tubes , uterus, vagina.
Topic 36. Medical embryology. Early stages of human development. Provisional bodies.
Topic 37. Control of the acquisition of practical skills (diagnosis of drugs)
Topic 38. Control of assimilation of theoretical knowledge on topics 30-37.

SECTION 5

Topic 39. Organs of the oral cavity. Salivary glands.
Topic 40. Structure of teeth. Development of teeth.
Topic 41. Digestive tube. Pharynx, esophagus, stomach.
Topic 42. Digestive tube. Small and large intestines.
Topic 43. Digestive glands. Liver. Pancreas.
Topic 44. Respiratory system. Airways . The organ of smell.
Respiratory department.
Topic 45. Leather and its derivatives.
Topic 46. Control of the acquisition of practical skills (diagnosis of drugs)
Topic 47. Control of assimilation of theoretical knowledge on topics 39-46.
Final control of mastering tests of the STEP 1 format from the course of histology, cytology, and embryology.

LIST OF RECOMMENDED LITERATURE

Main:

1. Lutsyk O.D. Histology. Cytology. Embryology. Textbook. Vinnytsia "New book", 2018.
2. Histology. Short course. Tutorial. Edited by Yu.B. Tchaikovsky. Vinnytsia "New book", 2016.
3. Lutsik O.D., Ivanova A.Y., Kabak K.S., Tchaikovsky Y.B., Human histology. Textbook. Kyiv "Knyga-plus", 2013.
4. Special histology and embryology of internal organs. Tutorial. Under the editorship E.F. Barynova , Yu.B. Tchaikovsky. Kyiv, VSV "Medicine", 2013.

Additional literature:

1. Histological terminology. International terms in human cytology and histology / Federated International Committee on Anatomical Terminology: translation from English . View. under the editorship Yu.B. Tchaikovsky, O.D. Lutsika - K.: Medicine, 2010. - 304 p.

2. Ross MH, Pawlina W. Histology : a text and atlas6th edition . - Lippincott Williams & Wilkins , 2011. - 996 p.

EVALUATION

Forms of control and criteria for evaluating learning outcomes

Current control: oral survey, testing; assessment of the performance of practical skills in working with micropreparations and electronograms.

Final control : exam.

Evaluation of the current educational activity in a practical lesson :

1. Evaluation of theoretical knowledge on the subject of the lesson:
- methods: survey, solution of situational problems and test problems;
- the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .
2. Assessment of practical skills and keeping a practical notebook on the subject of the lesson:
- methods: assessing the correctness of filling in the practical notebook (tables and figures)
- maximum score – 5, minimum score – 3, unsatisfactory score – 2 ;

The grade for one practical session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

Current evaluation criteria in practical training

Rating	Evaluation criteria
Perfectly "5"	The student is fluent in the material, takes an active part in discussing and solving situational and test problems, confidently demonstrates practical skills in working with micropreparations, expresses his opinion on the subject of the lesson, demonstrates basic knowledge.
Fine "4"	The applicant has a good command of the material, takes part in the discussion and solving of situational and test problems, demonstrates practical skills in working with micropreparations with some errors, expresses his opinion on the subject of the lesson, demonstrates basic knowledge.
Satisfactorily "3"	The applicant does not have sufficient knowledge of the material, is unsure of participating in the discussion and solving of situational and test problems, demonstrates practical skills when

	working with micropreparations and electronograms.
Unsatisfactorily "2"	The applicant does not possess the material, does not take part in the discussion and solution of situational and test problems, does not demonstrate practical skills when working with micropreparations and electronograms.

The applicant is admitted to the exam on the condition that the requirements of the educational program are met and if he received at least 3.00 points for the current educational activity and passed the test control of the "Step-1" tests with at least 90% (50 tasks).

The test control is held in the Educational and Production Complex of Innovative Technologies of Learning, Informatization and Continuous Education of ONMedU in the last class before the exam.

Criteria for evaluating the learning outcomes of education seekers on the exam

Rating	Evaluation criteria
Perfectly "5"	It is presented to the applicant who worked systematically during the semester, showed during the exam versatile and in-depth knowledge of the program material, is able to successfully perform the tasks provided for by the program, mastered the content of the main and additional literature, realized the interrelationship of individual sections of the discipline, their importance for the future profession, showed creative abilities in understanding and using the educational program material, showed the ability to independently update and replenish knowledge; the level of competence is high (creative);
Fine "4"	It is awarded to the applicant who has demonstrated complete knowledge of the curriculum material, successfully completes the tasks provided for by the program, mastered the basic literature recommended by the program, has shown a sufficient level of knowledge in the discipline and is capable of their independent updating and renewal in the course of further education and professional activity; the level of competence is sufficient (constructive and variable)
Satisfactorily "3"	It is issued to the applicant who has demonstrated knowledge of the basic curriculum material in the amount necessary for further

	education and subsequent work in the profession, copes with the tasks provided for in the program, made some mistakes in the answers on the exam and when completing the exam tasks, but has the necessary knowledge for overcoming mistakes made under the guidance of a scientific and pedagogical worker; level of competence - average (reproductive)
Unsatisfactorily "2"	It is presented to the applicant who did not demonstrate sufficient knowledge of the main educational program material, made fundamental mistakes in the performance of the tasks provided for by the program, cannot use the knowledge in further studies without the help of a teacher, did not manage to master the skills of independent work; the level of competence is low (receptive - productive)

Distribution of points received by higher education applicants

The grade for the discipline consists of 50% of the grade for the current academic performance and 50% of the grade for the exam.

The average score for the discipline is translated into a national score and converted into points on a multi-point scale (200-point scale).

The conversion of a traditional grade into a 200-point grade is performed by the information and technical department of the University using the "Contingent" program according to the formula:

Average mark success (current success rate with disciplines) h 40

Table of conversion of traditional assessment to multi-point assessment

National grade for discipline	The sum of points for the discipline
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

By *rating scale ESTS* the achievements of students in the educational component who are studying in the same course of the same specialty are evaluated, according to the points they received, by means of ranking, namely:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale	Statistical indicator
AND	Top 10% achievers
IN	The next 25% of earners
WITH	The next 30% of earners
D	The next 25% of earners
IS	The next 10% of earners

INDEPENDENT WORK OF HIGHER EDUCATION ACQUIRES

Evaluation of the independent work of graduate students and applicants, when studying a selective academic discipline, is provided by methodical developments, visual teaching aids (video lectures , presentations), an information resource
department, the subject of independent works, structured algorithms of skill control.

EDUCATIONAL DISCIPLINE POLICY

and Rescheduling Policy

- time to work off academic debt for domestic and English-speaking students - Monday, Tuesday, Wednesday (from 2:00 p.m. to 4:00 p.m.); provided that the student has a valid reason for missing a class (which is confirmed by relevant documents), he must provide a copy of the document confirming the valid reason for missing (donor, Olympics, conferences, etc.) and fill in the pages of the album according to the topic of the class. If a student wants to receive a grade for a missed lesson, he must give an answer to the teacher on duty and fill in the pages of the album according to the topic of the lesson
- a necessary condition for a student's admission to take/retake the final control of practical knowledge is the absence of academic debt, that is, there are no " nb " and an average score of 3.0 from the list of topics that are included in the control of the acquisition of theoretical knowledge. As well as correctly filled tables and correctly drawn pictures in the album for practical classes. Only if the student passes the practical skills test, he is allowed to take/retake the final test of theoretical knowledge.

Academic Integrity Policy

The policy of the educational component is based on the principles of the academic one
integrity (link to the regulations on the university's website

https://onmedu.edu.ua/wp-content/uploads/2020/07/polozhennja-pro-dobrochesnist.pdf and is determined by the system of requirements that the teacher presents to
of the applicant when studying the educational component:
- independent performance of educational tasks, tasks of the current and final control of learning results (for persons with special educational needs, this requirement is applied taking into account theirs individual needs and capabilities);
- links to sources of information in the case of using ideas, developments, statements, information.

Attendance and Tardiness Policy:

All practical classes and lectures of the course are mandatory to attend. In case of absence , the student is obliged to complete the lecture/practical lesson in the allotted time. Lateness is unacceptable. A student who is not in the classroom at the start of the lecture/practical session automatically receives a "NB".

Mobile devices:

The use of mobile devices is permitted in class with permission
the teacher

Behavior in the audience:

- The following is prohibited in the premises of the department:
- use alcoholic beverages, narcotic drugs, psychotropic substances or their analogues;
- smoking;
- distribution and use of narcotic substances;
- behavior that does not correspond to generally accepted norms;
- staying in educational and service premises outside of school hours;
- to break the silence during classes;
- gaff;
- commit immoral acts;
- staying in headgear (except medical cap).
- During practical classes and lectures, students must follow certain disciplinary rules:
- it is forbidden to be late for classes;
- when the teacher enters as a sign of greeting, students must stand up;
- extraneous conversations (including on a mobile phone) or other noise that interferes with classes are not allowed;
- leaving and moving around the classroom during class is allowed only with the teacher's permission.

The following values should be cultivated while in the audience:
respect for colleagues; tolerance for others; receptivity and impartiality;
argumentation of agreement or disagreement with the opinion of other

participants in the discussion, as well as one's own opinion; respecting the dignity of the opponent's personality during communication; compliance with the ethics of academic relationships.

Head of the department Tiron O.I.