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

Syllabus of the course
Histology, cytology and embryology

Amount	6,00 ECTS credits, 180 hours
Semester, year of study	1st and 2nd semester of the first year of study
Days, time, place	Monday to Friday from 08:30 to 16:12 The main building of ONMedU (Odessa, Olgievskaya Street, 4b): according to the schedule in the classrooms of the Histology Department
Teacher (s)	Tiron Oksana Ivanivna Candidate of Medical Sciences, docent, head of the Department 0672827333 chekina.o@ukr.net Kuvshinova Irina Ivanovna Candidate of Medical Sciences, docent 0634161124 Irinakuvshinova.2000@gmail.com Breus Volodymyr Yevhenovych Candidate of Medical Sciences, senior teacher 0675564787 breusve@ukr.net Markova Olena Olehivna Candidate of Medical Sciences, senior teacher 0682544959 alenushkamarkova71@gmail.com Lyashevska Oleksandra Oleksandrivna head teacher., assistant 0663213677 alexandra.lyashevskaya@gmail.com
Contact phone	(048)7317059, (048)7123118
E-mail	histology_odessa@ukr.net , oksana.tiron@onmedu.edu.ua
Workplace	The main building of ONMedU Odessa, Olgievskaya Street, 4b
Consultations	Monday, Tuesday, Wednesday: 1 shift - 14.00 -16.00

COMMUNICATION

Communication with students is carried out through the specified e-mail addresses and telephone numbers of teachers, the department's page , online platform Microsoft Teams.

COURSE ANNOTATION

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

Prerequisites: Histology as a discipline is based on the study of anatomy, medical biology, chemistry, biophysics, Latin and integrates with these disciplines.

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

The aim of the 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 living conditions.

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

Need to know:

- histological elements and their structural components in light and electron microscopy
- structural features and functional specialization of cells

Be able to:

- to apply knowledge of histology, cytology and embryology in practical situations, namely:
- to apply knowledge of the molecular and structural foundations of the functioning and restoration of cells and their derivatives.
- to interpret the basics of adaptation, reactivity and maintenance of homeostasis.
- to determine the adaptive and regenerative capabilities of organs, taking into account their tissue composition, regulation features and age-related changes.
- to interpret the patterns of human embryonic development, regulation of the processes of morphogenesis.
- to determine the critical periods of embryogenesis, defects and anomalies of human development.

Master skills:

1. Use of microscopic devices.
2. Diagnostics of micropreparations and electronic micrographs by their tissue and cellular composition.

COURSE DESCRIPTION

Types of classes according to the curriculum are:

A) lectures (34 hours);

B) practical classes (86 hours);

C) independent work of students (60 hours).

The content of the discipline

Subsection 1

Topic 1. Introduction to the course of histology, cytology and embryology. Microscopic. Microscope devices. Histological technique.

Topic 2. Cytology. General organization of the cell. Plasmolema. Cell-to-cell junctions. Cytoplasm. Cell metabolism. Synthetic cell apparatus. Catabolism system.

Topic 3. Cytology. Cytoplasm. Cytoskeleton. Cytoprotection system and cell self-renewal. Nucleus. Reproduction of cells. Cell cycle. Mitosis. Cell life cycle. Differentiation. Aging. Cell death.

Topic 4. The concept of tissue. Epithelial tissue. Types of simple epithelia. Stratified and glandular epithelia.

Topic 5. Tissues of the internal environment. Blood. Erythrocytes. Trombocytes. Plasma.

Topic 6. Blood. Granular leukocytes. Agranular leukocytes. Lymph. Clinical significance of blood indicators. Embryonic and postembryonic hemocytopoiesis.

Topic 7. Control of practical skills (diagnosis of slides) according to topics 1-6.

Topic 8. Control of assignment theoretical knowledge according to topics 1-7.

Subsection 2

Topic 9. Connective tissue. Cells of loose connective tissue. Extracellular matrix. Dense connective tissue. Connective tissue with special properties.

Topic 10. Cartilage. Chondrohistogenesis.

Topic 11. Skeletal tissues. Structure of bone tissue. Bone joints. Osteogistogenesis.

Topic 12. Muscular tissue. Striated skeletal muscle tissue. Cardiac and Smooth muscle tissue.

Topic 13. Nervous tissue. Neurocytes. Neuroglia. Nervous fibers and endings.

Topic 14. Control of practical skills according to topics 9-13.

Topic 15. Control of assignment of theoretical knowledge according to topics 9-14.

Subsection 3

Topic 16. Nervous system. Spinal and vegetative ganglia. Spinal cord. Peripheral nerves. Nervous system. Cerebral cortex. Cerebellum.

Topic 17. Sensory systems. Organ of vision.

Topic 18. Sensory systems. Organ of hearing and equilibrium.

Topic 19. Cardiovascular system. Heart. Arteries. Cardiovascular system. Veins. Microcirculatory bed.

Topic 20. Central organs of hematopoiesis and immune defense. Red bone marrow. Thymus.

Topic 21. Peripheral organs of hematopoiesis and immune defence. Spleen. Limphatic nodes.

Topic 22. Control of practical skills according to topics 16-21.

Topic 23. Control of assignment of theoretical knowledge according to topics 16-22.

Subsection 4

Topic 24. Endocrine system. Hypothalamus. Pituitary gland. Epiphysis.
Topic 25. Endocrine system. Thyroid, parathyroid and adrenal glands.
Topic 26. Urinary system.
Topic 27. Male reproductive system. Spermatogenesis. Testicles. Additional glands of male reproductive system.
Topic 28. Female reproductive system. Ovaries. Ovogenesis.
Topic 29. Female reproductive system. Ovarian-menstrual cycle. Uterus. Vagina. Uterine tubes.
Topic 30. Medical embryology. Early stages of human development. Provisoral organs. Provisoral organs. Critical periods of human development.
Topic 31. Control of practical skills on topics 24-30.
Topic 32. Control of theoretical knowledge on topics 24 - 31.

Subsection 5

Topic 33. Oral cavity.
Topic 34. General characteristics of the structure of the teeth. The structure of the enamel. Structure of dentine and cement of tooth. The structure of the pulp and the supporting apparatus of the tooth.
Topic 35. Development of teeth-
Topic 36. Alimantary canal. Pharynx. Esophagus. Stomach.
Topic 37. Alimentary canal. Small and Large Intestine.
Topic 38. Digestive glands. Liver. Pancreas. Salivary glands.
Topic 39. Respiratory system.
Topic 40. Skin and its derivatives.
Topic 41. Control of practical skills on topics 33 - 40.
Topic 42. Control of theoretical knowledge on topics 33 - 41.
Final control of knowledge of the KROK 1 format tests on the course of histology, cytology and embryology.

LIST OF RECOMMENDED LITERATURE

MAIN LITERATURE

1. Bobrysheva I. V. Histology, cytology, embryology / I. V.Bobrysheva, S. A. Kashchenko. – Lugansk. : “Knoledge”, 2011. – 437 p.
2. Arnautova L.V. Histology f course of lectures /L. V. Arnautova, O. A. Ulyantseva. – Odessa. : The Odessa National Medical University, 2011. – 216 p.

ADDITIONAL LITERATURE

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

2.Kierszenbaum A. L. Histology and cell biology: an introduction to pathology3rd edition. -A. L. Kierszenbaum. – Elsevier, 2011. – 720 p.

EVALUATION

Methods of control and criteria for evaluating learning outcomes

Current practical control: assessment of practical skills in working with micropreparations and electrograms.

Current theoretical control: oral examination, testing.
Final control: exam.
The structure of the current assessment in the practical lesson:
1. Assessment of theoretical knowledge on the topic of the lesson:
- methods: surveys, solving situational problems and test tasks;
- maximum mark - 5, minimum mark - 3, unsatisfactory mark - 2.
2. Assessment of practical skills and keeping a practical notebook on the topic of the lesson:
- methods: assessment of the correctness of filling out a practical notebook (tables and pictures)
- maximum mark - 5, minimum mark - 3, unsatisfactory mark - 2;

Criteria for current assessment in the practical lesson:

«5»	The student is fluent in the material, takes an active part in the discussion and solution of situational and test problems, confidently demonstrates practical skills in working with micropreparations, expresses his opinion on the topic of the lesson, demonstrates basic knowledge.
«4»	The student is well versed in the material, participates in the discussion and solution of situational and test problems, demonstrates practical skills in working with micropreparations with some mistakes, expresses his opinion on the topic of the lesson, demonstrates basic knowledge.
«3»	The student does not have enough material, insecurely participates in the discussion and solution of situational and test tasks, demonstrates practical skills when working with micropreparations and electrograms.
«2»	The student does not own the material, does not participate in the discussion and solution of situational and test tasks, does not demonstrate practical skills when working with micropreparations and electrograms.

The student is admitted to the exam if he meets the requirements of the curriculum and if for the current academic activity he received at least 3.00 points and passed the final test control for the tests "KROK-1" by at least 90%. Test control is carried out in the Training and Production Complex of Innovative Technologies of Teaching, Informatization and Continuing Education of ONMedU at the last lesson.

Criteria for assessing the learning outcomes of students in the exam:

«5»	Exhibited to a student who worked systematically during the semester, showed during the exam versatile and deep knowledge of the program material, is able to successfully perform the tasks provided by the program, mastered the content of basic and additional literature, realized the relationship of individual sections of the suubject, their importance for future profession, showed creative abilities in understanding and using educational material, showed the ability to independently update and replenish knowledge; level of competence - high (creative);
«4»	It is presented to a student who has shown full knowledge of the curriculum, successfully performs the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge of the subject and is able to independently update and update during further study and professional activities; level of competence - sufficient (constructive-variable)
«3»	Exhibited to a student who has shown knowledge of the basic curriculum in the amount necessary for further study and further work in the profession, copes with the tasks provided by the program, made some mistakes in answering the exam and when performing exam tasks, but has the necessary knowledge to overcoming mistakes under the guidance of a research and teaching staff; level of competence - average (reproductive)
«2»	Exposed to a student who did not show sufficient knowledge of the basic curriculum, made fundamental mistakes in performing the tasks provided by the program, can not without the help of the teacher to use the knowledge in further study, failed to master the skills of independent work; level of competence - low (receptive-productive).

Distribution of points received by applicants for higher education

The grade for the subject consists of 50.0% of the grade for the current performance and 50.0% of the mark for the exam.

The average score for the subject is translated into a national grade and converted into scores on a multi-point scale.

Conversion of the traditional grade for the discipline in the 200-point is carried out by the information and computer center of the university program "Contingent".

Table for conversion of traditional assessment into multi-point:

National grade on a discipline	The sum of points for the discipline
«5»	**185-200**
«4»	**151-184**
«3»	**120-150**
«2»	**Below 120**

Points from the discipline are independently converted into both the ECTS

scale and the four-point scale. ECTS scale scores are not converted to a four-point scale and vice versa. Further accounts are carried out by the information and computer center of the university.

Conversion of traditional assessment in the discipline and the amount of points on the ECTS scale

ECTS score	Statistical indicator
A	The best 10% of students
B	The next 25% of students
C	The next 30% of students
D	The next 25% of students
E	The next 10% of students

The ECTS scale is given by the ONMedU educational subdivision or the dean's office after ranking the grades in the discipline among students studying in one course and in one specialty. According to the decision of the Academic Council, it is recommended to rank students - citizens of foreign countries in one array.

INDEPENDENT WORK OF APPLICANTS FOR HIGHER EDUCATION

Evaluation of independent work of graduate students and applicants, when studying a selective academic discipline, is provided by methodological developments, visual teaching aids (video lectures, presentations), an information resource departments, topics of independent work, structured algorithms for controlling skills.

POLICY OF THE DISCIPLINE

Deadline and retake policy

- time for working off of academic debt for domestic students - Monday, Tuesday, Wednesday (from 14.00-16.00); English-speaking students - Monday, Tuesday, Wednesday (10.00-12.00)
- if the student has a valid reason for missing the lesson (as evidenced by the relevant documents), he must provide a copy of the document confirming the valid reason for the absence (donor, competitions, conferences, etc.) and fill in the album pages according to the lesson topic. If a student wants to get a grade for a missed lesson, he must answer to the duty teacher and fill in the album pages according to the topic of the lesson.
- a necessary condition for the student's admission to take/retake the final control of practical knowledge is the absence of academic debt, ie no "nb" and a grade point average of 3.0 from the list of topics included in the control of theoretical knowledge. As well as correctly filled tables and correctly drawn pictures in the album for practical classes. Only in the case whether a student taking control of

practical skills, he is allowed to take / retake the final control of theoretical knowledge.

Academic Integrity Policy

The policy of the educational component is based on the principles of the academic 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 the applicant when studying the educational component:
- independent performance of educational tasks, tasks of the regular 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 lateness policy:

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

Mobile devices:

Using technical aids (headphones, telephones, smartphones, smartwatches, tablets, etc.) during the controls is unacceptable.

Audience behavior:

It is forbidden to:

- Using of alcohol, drugs, psychotropic substances or their analogs;
- Smoking;
- Distribution and use of narcotic substances;
- Behavior that does not comply with generally accepted norms;
- Stay in educational and office premises after school hours;
- Break the silence during classes;
- Gamble;
- Commit immoral acts;
- Stay in a hat (except for a 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;

- Third-party conversations (including on a mobile phone) or other noise that interferes with the conduct of classes are not allowed;
- To go out and move around the classroom during class is allowed only with the permission of the teacher.

The following values should be encouraged in the auditorium:
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 Oksana TIRON