

SILABUSU DEVELOPERS:

1. Stepanenko Oleksandr, Head of the Department, Doctor of Medicine, Professor

2. Deieva Tetyana, PhD, Associate Professor _____

3. Erokhina Victoria, PhD, Associate Professor _____

INFORMATION ABOUT TEACHERS

1. **Stepanenko Oleksandr**, Head of the Department, professor, Doctor of Medicine, Professor.

Professional interests: structural and functional organization of the nervous system, individual anatomical variation of structures and organs in the human body.

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2. **Deieva Tetyana**, PhD, Associate Professor

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7. Gubenko Irina, Assistant

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9. Alekseeva Victoria, PhD, Assistant

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10. Panasenko Viacheslav, Assistant

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11. Novikova Katerina, Assistant

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INTRODUCTION

The Syllabus of the educational discipline "Histology, cytology and embryology" was created in accordance with the educational and professional programs (EPP) "Histology, cytology and embryology" and the Standard of education - "_Healthcare", specialties "222 "Medicine" - Master's Degree".

Short description of the course (annotation)

This course provides an introduction to the microscopic anatomy of a human. The human body consists of a huge variety of cell types, that are organized into tissues and organs that perform a complex of vital functions. Histology is the study of the cellular architecture of tissues; it provides a deep understanding of the functioning of the organism. In this course, we use an approach that explains the structure of tissues and organs in close relation to their function.

The course will begin with a brief introduction of the cell structure as the basis of all living organisms and the basics of embryology, that connects the structure and location of tissues with their embryonic origin. Next, we will move in the direction of classifying tissue types and studying the structure of organs. Although the emphasis is on normal (healthy) structure, some pathology will be introduced to illustrate the macroscopic consequences of microscopic abnormalities. By the end of the course, students will be able to study histological slides and identify the types of tissues that are present there, their roles, and the interaction between structure and function. This course is ideal for students considering a career in medicine, as well as for students who have a special interest in the structure of the human body.

Interdisciplinary connections. The course of histology is closely connected with the teaching of other medical and biological sciences.

Prerequisites. Histology, cytology and embryology as a discipline based on the study of students of medical biology, anatomy and integrates with these disciplines.

Post-requisites. Histology provides the basis for studying students of physiology, biochemistry, pathological anatomy and pathological physiology, propaedeutic of clinical disciplines, which involves the integration of teaching with these disciplines and the formation of skills to apply knowledge of histology, cytology and embryology in the process of teaching; provides the basis for a healthy lifestyle and prevents dysfunction of organism in the process of life.

Thus, histology occupies an important place in the system of medical education, laying the foundations of a scientific structural and functional approach in the analysis of the vital functions of the human body in normal and in pathology.

Link to the discipline page in MOODLE:

<http://distance.knmu.edu.ua/course/index.php?categoryid=44>

THE PURPOSE AND OBJECTIVES OF THE EDUCATIONAL DISCIPLINE

1.1. The purpose of the study of the discipline.

The purpose of the study of the discipline "Histology, Cytology and Embryology" is established on the basis of preparation of doctor in the specialty in accordance with the block of its content module (natural science training) and is the basis for determining the content of the discipline. Description of goals is formulated through the ability in the form of goals (actions).

1.2. The basic purposes of studying the discipline are the basis of the ultimate goals for each module or content module, specific goals are formulated in the form of specific skills, objectives that ensure the achievement of the ultimate goal of studying the discipline. The end goals are formulated at the beginning of the program and precede its contents, specific goals precede the content of the corresponding content module. Main tasks are to teach the student:

- To interpret the molecular and structural bases of the functioning and repair of cells and their derivatives
- To interpret the structural bases of adaptation, reactivity and maintenance of homeostasis
- To determine the adaptation and regenerative capacity of organs, taking into account their tissue composition, features of regulation and age changes
- To interpret the structural and molecular basis of regenerative medicine
- To interpret the structural bases of human reproduction
- To interpret patterns of human embryonic development, regulation of morphogenesis processes
- Identify critical periods of embryogenesis, defects and human developmental abnormalities.

1.3 Competencies and learning outcomes. The result of the study of discipline should be the formation of theoretical foundation for the study of clinical disciplines, namely: - the ability to abstract misleading, analysis and synthesis;.

- readiness to self-development, self-realization, self-awareness, the use of creative potential;

- willingness to solve standard tasks related to professional activity, using information, bibliographic resources, medical and biological terminology with the help of information security.

1.3.1. The study of the academic discipline will ensure that students acquire the following **competencies**:

- *integral* competence: acquiring knowledge about the structural and functional unity of the structure of organs and tissues;
- *general* competence: knowledge of microscopic structure of cells, tissues and organs;
- *special* (professional, substantive) competence: acquiring knowledge and skills to determine the differences between normal structure and pathology. Ability to detect deviations in the structure of organs and tissues. Proficient microscopy skills.

1.3.2. the study of the academic discipline will provide students with the following **program results of the study**:

PRS1 To own general and special fundamental and professional-oriented knowledge, cleverness, skills, competencies necessary for the implementation of typical professional tasks associated with activities in the medical industry in the relevant position.

PRS2 To own knowledge of the psychophysiological features of a human, human health, health care, prevention of ill health, treatment of people, health of the population.

PRS3 Apply the acquired knowledge, skills and understanding for solving typical tasks of the doctor's activity, the scope of which is provided for by the list of syndromes and symptoms, diseases, emergency conditions, laboratory and instrumental studies, medical manipulations.

1.3.3. The study of the discipline will ensure that students receive the following **social skills (Soft skills)**: the ability to debate professionally with colleagues; the ability to competently communicate with the patient and family.

2. THE INFORMATION CONTENT OF THE EDUCATIONAL DISCIPLINE

| Name of indicators | Area of knowledge, direction of training, educational qualification level | Characteristic of the discipline | |
|--|---|----------------------------------|----------|
| | | full-time education | |
| General amount of credits – 10,5 | Training direction 22 Health Care (code and name) | Normative | |
| General amount of hours - 315 | Specialty: 222 «Medicine» (code and name) | Year of the education: | |
| | | 1st | 2nd |
| | | Semester | |
| | | 2-nd | 3-rd |
| | | Lectures | |
| Hours for full-time (or evening) education: classroom - 150 student's independent work - 165 | Education level: Second (Master's level) | 20 hours | 20 hours |
| | | Practical classes | |
| | | 60 hours | 50 hours |
| | | Self-studying | |
| | | 100 hours | 65 hours |
| | | Individual tasks | |
| Type of control: final exam | | | |

2.1 Description of the discipline

2.2.1 Lectures

| № 3/II | Topics | Hours | Type of lecture |
|------------------------|---|-------|-----------------|
| Spring semester | | | |
| 1 | Introduction. Cytology | 2 | On-line |
| 2 | Embryology | 2 | On-line |
| 3 | Epithelial tissues | 2 | On-line |
| 4 | Tissues of the internal environment. Blood. Hematopoiesis | 2 | On-line |
| 5 | Connective tissues. Cartilage | 2 | On-line |
| 6 | Skeletal tissue. Bone | 2 | On-line |
| 7 | Muscle tissues. | 2 | On-line |
| 8 | Nervous tissue. Nervous system | 2 | On-line |
| 9 | Sensory system | 2 | On-line |
| 10 | Cardio-vascular system | 2 | On-line |
| Autumn semester | | | |
| 11 | Endocrine system | 2 | On-line |
| 12 | Organs of hematopoiesis and immune defense. | 2 | On-line |
| 13 | General structure and development of digestive tube. Oral cavity. | 2 | On-line |
| 14 | Digestive tube. Pharynx, esophagus, stomach, small and large intestine. Digestive glands. Liver. Pancreas. Salivary glands. | 2 | On-line |
| 15 | Respiratory system. | 2 | On-line |
| 16 | Urinary system. | 2 | On-line |
| 17 | Male reproductive system. | 2 | On-line |
| 18 | Female reproductive system I. | 2 | On-line |
| 19 | Female reproductive system II. | 2 | On-line |
| 20 | Medical Embryology. | 2 | On-line |
| | Total | 40 | , |

2.2.2 Practical classes

| № 3/Π | Topics | Hours | Teaching methods | Forms of control |
|---|--|----------|--|--|
| Spring semester | | | | |
| Chapter 1. Fundamentals of cytology, general embryology and Histology of general and special tissues | | | | |
| 1 | <p>Histology as a science and its divisions. The place of histology in medical education. Microscopy. Histotechniques...</p> <p>Levels of organization of biological systems Biomembranes as a structural basis of cells Plasma, nucleolemma. Cytoplasm. Organoids, inclusions, hyaloplasm. Functional cell systems: synthesis, catabolism, detoxification</p> <p>Nucleus. Structure, functions, chromatin, nucleolus, chromosomes. Types of cell reproduction. Cell cycle. Aging and cell death</p> | 4 | story- explanation, conversation, presentation, videos, videos, discussion | oral examination (individual and frontal); written survey; test control; creative tasks; individual tasks; ; report; declamation |
| 2 | <p>Embryology. Features of the structure of gametes.</p> <p>Early stages of embryogenesis: fertilization, cleavage, formation of morula and blastocyst. Gastrulation, differentiation of germ layers - neurulation, mesoderm differentiation, splanchnic (visceral) mesoderm, mesenchyme..</p> <p>Differentiation of mesenchyme on endothelial cells, haemopoietic stem cells and mesenchymal stem cells. The basics of histogenesis are derivatives from germ layers</p> | 4 | -----«----- | -----«----- |
| 3 | <p>Epithelial tissues. Epithelium, cell junctions.</p> <p>Glandular epithelium, glands.</p> | 4 | -----«----- | -----«----- |
| 4 | <p>Tissues of the internal environment. Blood. Lymph. Hematopoiesis</p> | 4 | -----«----- | -----«----- |
| 5 | <p>Tissues of the internal environment. Connective tissue.</p> <p>Loose fibrous connective tissue. Connective tissue with special features..</p> <p>Cooperative interaction of blood cells and connective tissue in allergic and inflammatory reactions/ Dense fibrous connective tissue. Ligaments, tendons.</p> | 4 | -----«----- | -----«----- |

| | | | | |
|--|---|----------|-------------|---|
| 6 | 6. Tissues of the internal environment. Connective tissue. Skeletal tissue. Cartilage tissue. Joints Bone tissue. Bone as an organ: Compact and spongy bone marrow. Osteons as structural and functional units of compact and spongy bone marrow. Histogenesis of bone tissue. | 4 | -----<----- | -----<----- |
| 7 | . Muscular tissues. Types of muscle tissues.. Muscle as an organ. Muscle attachment | 4 | -----<----- | -----<----- |
| 8 | Nervous tissue. Composition. Types of neurons. Glial cells. Nerve fibers. Nerve endings. Synapses. Nervous System. The brain and spinal cord. Peripheral ganglia and nerves. Complex reflex arcs | 4 | -----<----- | -----<----- |
| 9 | Final control № 1 | 4 | | oral examination (individual), test control |
| Chapter 2. Special histology and embryology of regulatory and sensory systems | | | | |
| 10 | Sensory system. Afferent nerve endings - receptors. Eye Hearing and balance organ. | 4 | -----<----- | -----<----- |
| 11 | Cardiovascular system. Blood vessels. Heart. | 4 | -----<----- | -----<----- |
| 12 | Organs of hematopoiesis and immune defense. Central organs. Peripheral organs | 4 | -----<----- | -----<----- |
| 13 | Endocrine system. Central and peripheral organs. Peripheral organs | 4 | -----<----- | -----<----- |
| 14 | . Skin and its derivatives. Structure and development of the skin. Types of skin. Nails, hair, glands (sweat, sebaceous). | 4 | -----<----- | -----<----- |
| 15 | Final control № 2 | 4 | | oral examination (individual), test control |
| Autumn semester | | | | |
| Chapter 3. Special histology and embryology of the digestive and respiratory system | | | | |

| | | | | |
|--|---|----------|-------------|---|
| 1 | General structure of digestive tube. Oral cavity organs. Lips, cheeks, hard and soft palate. Teeth. Development of teeth. Tongue. Organ of taste. | 4 | -----<----- | -----<----- |
| 2 | .Digestive tube. Pharynx, esophagus, stomach, small and large intestine. Digestive tube. Depelopment. | 4 | -----<----- | -----<----- |
| 3 | Digestive glands. Liver. Pancreas. Salivary glands. Depelopment of the liver and pancreas | 4 | -----<----- | -----<----- |
| 4 | Respiratory system. General structure of the respiratory system. Development of the respiratory system. Olfactory organ. | 4 | -----<----- | -----<----- |
| 5 | Final control № 3 | 4 | | oral examination (individual), test control |
| Chapter 4. Special histology and embryology of internal organs and reproductive system. | | | | |
| Medical embryology | | | | |
| 6 | Urinary system. General structure and development of the urinary system. Endocrine apparatus. | 4 | -----<----- | -----<----- |
| 7 | Male reproductive system. General structure and development of the male reproductive system. Spermatogenesis. Gonads. Efferent ducts. Accessory glands | 4 | -----<----- | -----<----- |
| 8 | Female reproductive system. General structure and development of organs of the female reproductive system. Ovaries. Oogenesis and folliculogenesis.. | 4 | -----<----- | -----<----- |
| 9 | Female reproductive system Uterus. Fallopian tubes. Menstrual cycle. Yellow body. Mammary glands. Vagina | 4 | -----<----- | -----<----- |
| 10 | Medical embryology. Provisional organs. Placenta. Decidua. | 4 | -----<----- | -----<----- |
| 11 | Embriogenesis of urinary and reproductive systems | 4 | -----<----- | -----<----- |
| 12 | Final control № 4 | 4 | | oral examination (individual), test control |
| 13 | Credit | 2 | | |

2.2.3. Self-study

| № з/п | Topics | Hours | Teaching methods | Forms of control |
|-------|--|-------|---|--|
| 1 | Research methods in histology. Technology of histological slides preparations | 4 | Презентація, доповідь, дискусія, онлайн консультування. | Усне опитування (індивідуальне); доповідь; виступ на задану тему |
| 2 | Relation of histology, cytology and embryology with other biomedical sciences | 3 | -----«----- | -----«----- |
| 3 | Reception mechanisms | 4 | -----«----- | -----«----- |
| 4 | Structural bases of cytoprotection | 3 | -----«----- | -----«----- |
| 5 | Response of cells to external stimuli: irritability and reactivity | 4 | -----«----- | -----«----- |
| 6 | General principles of tissue organization. | 3 | -----«----- | -----«----- |
| 7 | The epithelium as a leading component of histo-hematic barriers. | 3 | -----«----- | -----«----- |
| 8 | Epithelial stem cells | 4 | -----«----- | -----«----- |
| 9 | Leukocytes. Mechanisms of adhesion, migration and killing of microorganisms. | 5 | -----«----- | -----«----- |
| 10 | Embryonic and post-embryonic hemopoiesis. | 5 | -----«----- | -----«----- |
| 11 | Repairing loose fibrous connective tissue. Regulation of the volume and composition of the connective tissue matrix. | 4 | -----«----- | -----«----- |
| 12 | Aseptic inflammation | 4 | -----«----- | -----«----- |
| 13 | Articular cartilage | 3 | -----«----- | -----«----- |
| 14 | Bone as an organ. | 4 | -----«----- | -----«----- |
| 15 | Bone remodeling. Bone tissue regeneration | 4 | -----«----- | -----«----- |
| 16 | Muscle as an organ. Muscle regeneration. | 3 | -----«----- | -----«----- |
| 17 | Nerve endings. Neuromuscular junction. | 4 | -----«----- | -----«----- |
| 18 | Histophysiology of locomotor apparatus | 4 | -----«----- | -----«----- |
| 19 | Development of the | 5 | -----«----- | -----«----- |

| | | | | |
|-----------|---|-----|-------------|-------------|
| | cardiovascular system. | | | |
| 20 | Morphological bases of neurohumoral regulation of blood vessels activity. | 4 | -----«----- | -----«----- |
| 21 | Embryonic development of the endocrine glands | 5 | -----«----- | -----«----- |
| 22 | Diffuse endocrine system. | 4 | -----«----- | -----«----- |
| 23 | Trans- and parhypophyseal regulation | 4 | -----«----- | -----«----- |
| 24 | Embryogenesis of hematopoietic organs. | 4 | -----«----- | -----«----- |
| 25 | Cellular basis of cellular and humoral immunity | 4 | -----«----- | -----«----- |
| 26 | Development of the nervous system. | 4 | -----«----- | -----«----- |
| 27 | Eye development. | 5 | -----«----- | -----«----- |
| 28 | Ear development. | 5 | -----«----- | -----«----- |
| 29 | Development of the oral cavity and organs of the digestive system | 5 | -----«----- | -----«----- |
| 30 | Gut-associated lymphoid tissue | 4 | -----«----- | -----«----- |
| 31 | Morphofunctional characteristics of salivary glands | 4 | -----«----- | -----«----- |
| 32 | Embryogenesis of the digestive system | 5 | -----«----- | -----«----- |
| 33 | Embryonic development of the respiratory system. | 3 | -----«----- | -----«----- |
| 34 | Structural bases of urine concentration. | 4 | -----«----- | -----«----- |
| 35 | Structural and molecular criteria for the diagnosis of male infertility | 4 | -----«----- | -----«----- |
| 36 | Hormonal regulation of the ovarian-menstrual cycle | 4 | -----«----- | -----«----- |
| 37 | Endometrial receptivity and implantation mechanisms. | 4 | -----«----- | -----«----- |
| 38 | Human extraembryonic organs. | 5 | -----«----- | -----«----- |
| 39 | Patterns of organogenesis. | 6 | -----«----- | -----«----- |
| 40 | Endocrine functions of the female and male reproductive systems | 5 | -----«----- | -----«----- |
| | Total | 165 | | |

3. CONTROL METHODS

3.1 Evaluation of the success of education of students is carried out on the basis of the current "Instructions for evaluating the educational activities of students of KhNMU".

Ongoing learning activities are supervised by a group teacher at each practical session. The control includes: entrance control, control of mastering practical skills (histological slides), as well as oral interview at the end of the class. After mastering each topic, students are presented with scores on a 4-point system. The total score for the semester is defined as the arithmetic mean of national grades for each class and software, rounded to 2 decimal places.

Oral control conducted after studying the logically complete block (for example. tissues). The conclusion is accepted by the teacher of the group and includes: solving of the situational tasks; assessment of practical skills (recognition of the histological slides), evaluation criterion - "fulfilled - failed"; a student's oral control of theoretical knowledge. The student is given a traditional 4-point national scale score, which is counted as average score.

The **credit** is given by the teacher in the last lesson in the form of an oral discussion and provides for the continuing academic success (Table 1). The score is determined in points from 70 to 120 and the mark - "credited".

Individual task. Scores for individual tasks (no more than 10) are awarded to the student only once in commission (commission - head of the department, teacher of the group) only if they are successfully completed and protected and added to the continuing academic success. The total amount of points for the continuing academic success may not exceed 120 points.

Admission to the final exam is provided if the student has an average score for continuing academic success of 70 to 120; doesn't have missed classes and lectures; has completed all the tests.

Final exam is carried out by examiners, confirmed by the rector's order to the university at the term, as well as to the examination of the session. Final exam will be evaluated in points - from 50 to 80.

The final exam includes: Solution of the computer tests is recommended to be carried out at the last or second last practical class or the semester. Computer test includes basic (anchor) **multiple-choice question** tasks of "KROK" in number of at least **30 tests**. The evaluation criterion is 95% of correctly solved tasks; "pass - did not pass".

Assessment of practical skills and theoretical knowledge on all topics of the discipline on the day of the exam.

Each card for the final exam consists of five questions:

1. Cytology and embryology
2. General histology
3. Special histology
4. Histology of the digestive system

5. Urinary or reproductive system

Each question, in turn, consists of three levels: the first is based on basic material, the second - requires knowledge of more detailed material, and the third - knowledge of material that was intended for independent study.

For example:

1. Respiratory system. Conducting portion and respiratory portion: general structure, functions.
2. Regional features of the structure of the wall of the airways: nasal cavity, larynx, trachea, bronchi, bronchioles. Their structure and functions.
3. Broncho-associated lymphoid tissue: structural characteristic, functional value.

Assessment of practical skills and theoretical knowledge on all subjects of the discipline on the day of the exam is in accordance with table 5 "Instructions for the assessment of students' learning activities under the European Credit Transfer System of the educational process at KhNMU".

Table 1

**Conversion of the average score for the current activity to a multi-scale scale
(for subjects completed by dif. credit or final exam)**

| 4-point scale | 120-points scale | 4-point scale | 120-points scale |
|---------------|------------------|---------------|------------------|
| 5 | 120 | 3.91-3,94 | 94 |
| 4.95-4,99 | 119 | 3.87-3,9 | 93 |
| 4.91-4,94 | 118 | 3.83- 3,86 | 92 |
| 4.87-4,9 | 117 | 3.79- 3,82 | 91 |
| 4.83-4,86 | 116 | 3.74-3,78 | 90 |
| 4.79-4,82 | 115 | 3.7- 3,73 | 89 |
| 4.75-4,78 | 114 | 3.66- 3,69 | 88 |
| 4.7-4,74 | 113 | 3.62- 3,65 | 87 |
| 4.66-4,69 | 112 | 3.58-3,61 | 86 |
| 4.62-4,65 | 111 | 3.54- 3,57 | 85 |
| 4.58-4,61 | 110 | 3.49- 3,53 | 84 |
| 4.54-4,57 | 109 | 3.45-3,48 | 83 |
| 4.5-4,53 | 108 | 3.41-3,44 | 82 |
| 4.45-4,49 | 107 | 3.37-3,4 | 81 |
| 4.41-4,44 | 106 | 3.33- 3,36 | 80 |
| 4.37-4,4 | 105 | 3.29-3,32 | 79 |
| 4.33-4,36 | 104 | 3.25-3,28 | 78 |
| 4.29-4,32 | 103 | 3.21-3,24 | 77 |
| 4.25- 4,28 | 102 | 3.18-3,2 | 76 |
| 4.2- 4,24 | 101 | 3.15- 3,17 | 75 |
| 4.16- 4,19 | 100 | 3.13- 3,14 | 74 |
| 4.12- 4,15 | 99 | 3.1- 3,12 | 73 |
| 4.08- 4,11 | 98 | 3.07- 3,09 | 72 |
| 4.04- 4,07 | 97 | 3.04-3,06 | 71 |
| 3.99-4,03 | 96 | 3.0-3,03 | 70 |
| 3.95- 3,98 | 95 | Less than 3 | Not enough |

Assessment of theoretical knowledge, if practical skills are evaluated by the criteria "fulfilled", "failed"

| A mount of the question | 5» | 4» | 3» | Oral answer for cards that include the theoretical part of the discipline | За кожну відповідь студент одержує від 10 до 16 балів, що відповідає: «5» - 16 points; «4» - 13 points; «3» - 10 points. |
|----------------------------------|----|----|----|---|---|
| 1 | 16 | 13 | 10 | | |
| 2 | 16 | 13 | 10 | | |
| 3 | 16 | 13 | 10 | | |
| 4 | 16 | 13 | 10 | | |
| 5 | 16 | 13 | 10 | | |
| | 80 | 65 | 50 | | |

If the exam is not passed, the work off dates during the holidays are set before the start of the next semester.

Assessment of discipline. If the course is taught over 2 or more semesters, the discipline score is defined as the arithmetic mean of the continuing academic success scores for all semesters during which the discipline is translated into a 120-point ECTS scale (Table 1), with scores obtained directly on the differential credit or examination.

The maximum number of points that a student can earn for studying a discipline - 200 points, including the maximum number of points for continuing academic success - 120 points, and the maximum number of points for the results of the differential test or examination - 80 points. The minimum number of credits is 120, including the minimum of the continuing academic success - 70 and on the results of the exam or differentiated credit - 50 points.

Assessment of the results of the study of disciplines is carried out directly during the tests, differentiated tests and exams. The discipline score is defined as the total amount of the points for the continuing academic success and exam or differentiated test and is min - 120 to max - 200. The correspondence of the scores on the 200-point scale, 4 (national) scale and ECTS scale are shown in Table 6.

Table 6

Matching scores on a 200-point scale,
four-point (national) scale and scale ECTS

| Mark on 200-point scale | Mark on ECTS scale | Mark on four-point (national) scale |
|----------------------------|-----------------------|---|
| 180–200 | A | Excellent |
| 160–179 | B | Good |
| 150–159 | C | Good |
| 130–149 | D | Satisfactory |
| 120–129 | E | Satisfactory |
| Less than 120 | F, Fx | Unsatisfactory |

Assessment of the discipline is given only to students who have completed all the final grades, tests, differentiated tests and exams.

Students who have not completed the curriculum requirements are given a FX score if they have been admitted to the differential test or examination but have not passed the exam. Grade F is given to students who are not allowed to take a differentiated credit or exam.

Grades "FX" or "F" ("unsatisfactory") are given to students who have not enrolled in the discipline, the form of control of which is credit.

3.2. Exam questions:

<http://distance.knmu.edu.ua/course/view.php?id=2933#section-2>

3.3. Control questions

Control 1

1. Cytology. Definitions, tasks, significance for biology and medicine.
2. Cell theory. Problem history. Substantive provisions.
3. The surface complex of the cell. Membrane, supramembrane and submembrane components. Their structure and functions. Intercellular contacts, their types, structure and functions.
4. Metabolic apparatus of the cell. Its structural composition. General purpose organelles. Classification, structure and general characteristics.
5. The nuclear apparatus of the cell, its significance. The main components of the kernel. Their structural and functional characteristics. Nuclear – cytoplasmic ratio as an indicator of the functional state of the cell.
6. Cell membranes. Modern idea of their structure, properties and functional significance.
7. Membrane organelles. Golgi complex. Structure and functional significance.
8. Granular and non-granular endoplasmic reticulum. Structure and functions.
9. General purpose organelles. Mitochondria, structure, functional significance.
10. Lysosomes. Structure, functional significance.
11. Structure and functions of supramembrane organelles of cytoplasm.
12. The structure and functional significance of the centrosome.
13. Inclusion of cytoplasm. Their classification and significance.
14. Cell cycle: its stages, morphofunctional characteristics. Features in different cell types. Apoptosis and necrosis.
15. Methods of cell reproduction. Their morphological characteristics. Significance for biology and medicine.
16. Mitosis. Morphofunctional characteristics of its phases, their regulation
17. Embryology. Content. Scientific directions. Values for biology and medicine.
18. Gastrulation. Definition of the concept. Biological significance of the first and second stages of gastrulation.
19. Stages of embryogenesis. Gastrulation, its significance.
20. Embryonic leaves. Definition of the concept. Mesoderm and mesenchyme, their derivatives.
21. Ectoderm and endoderm, their derivatives.
22. Axial complex of organs in vertebrates and its development.

23. Germ cells. Morphological and functional characteristics of sperm and eggs. Fertilization.

24. Early stages of human development. Features of cleavage. Morula, blastocyst and its implantation.

25. Early human embryogenesis. Formation of provisional organs (chorion, yolk and amniotic vesicles, allantois).

26. Yolk sac, amnion and allantois. Their formation and functions in human embryonic development.

27. The human embryo at 4 weeks of development. Formation of the neural tube, somites and intestinal tube.

28. Implantation.

Tissues

1. Tissues. Definition of the concept. Classification.

2. The idea of determination and differentiation.

3. Differentiation and stem cells.

4. Cellular derivatives (synthetins and symplasts, intercellular substance).

5. Physiological and reparative regeneration of different types of tissues.

6. Epithelial tissues. General characteristics. Classification.

7. Morphofunctional characteristics of different types of integumentary epithelium.

8. Glandular epithelium. Classification and structure of glands. Morphology of the secretory cycle. Types of glandular section.

9. Blood. Hemogram. Erythrocytes, structure and functional significance.

10. Leukocytes. Classification, morphofunctional characteristics. Leukocyte formula and its features in different age groups.

11. Leukocytes. Basophilic and eosinophilic granulocytes.

12. Morphofunctional characteristics of monocytes.

13. Characteristics of immunocompetent cells. T – and B – lymphocytes, their development and differentiation.

14. Platelets, their number, structure, function.

15. Hematopoiesis. The concept of stem and semi-stem cells of hematopoietic tissue. Modern scheme of hematopoiesis

16. Fibrous connective tissue. Classification.

17. Loose fibrous connective tissue. Morphofunctional characteristics.

18. Cellular elements of connective tissue. Fibroblasts, their types, structure, functions.

19. Macrophages, plasma cells, their participation in immune reactions.

20. Intercellular substance of connective tissue (fibers, basic substance), structure, value. Formation of intercellular substance (on the example of collagen synthesis).

21. Dense fibrous connective tissue. Morphofunctional characteristics of the decorated dense fibrous connective tissue (for example, a tendon).

22. Connective tissues with special properties, their types, structure and functional significance.

23. Cartilaginous tissues. Classification, structure and functional significance. Cartilage development, regeneration and age-related changes.

24. Bone tissue. Classification. Morphofunctional characteristics of reticulofibrous connective tissue, its histogenesis.
25. Lamellar bone tissue. Tubular bone. Structure, development, regeneration.
26. Muscle tissue. Sources of development. General morphofunctional characteristics. Unstriated muscle tissue. Histogenesis, structure, regeneration.
27. Striped muscle tissue. Histogenesis, structure, regeneration. Structural bases of reduction. The structure of the muscle as an organ.
28. Cardiac muscle tissue. Histogenesis, microscopic and ultrastructural structure.
29. Nervous tissue. Morphofunctional characteristics. Sources of development. Neurons, classification, microscopic and ultrastructural structure.
30. Neuroglia. Classification, structure and function of different types of neuroglia.
31. Nerve fibers. Morphofunctional characteristics of myelin and myelin-free nerve fibers.
32. Nerve endings. Classification. Morphofunctional characteristics of motor nerve endings.
33. Interneuronal synapses, their structure and functions

Control 2

1. The concept of simple and complex reflex arcs.
2. Nervous system. General morphofunctional characteristics. Classification. Sources of development.
3. Spinal cord. Morphofunctional characteristics. Development. The structure of gray and white matter. Neural composition. Ascending and descending conductive pathways of the spinal cord.
4. Sensitive nerve nodes. Structure, functions and connections.
5. Peripheral nerve. Structure, degeneration and regeneration after injury.
6. Cerebellum. Structure and functional characteristics. Neural composition and gliocytes of the cerebellar cortex.
7. The brain. General morphofunctional characteristics. Cyto - and myeloarchitectonics of the cortex of the hemispheres. Age changes.
8. The brain. Bark of large hemispheres. Morphofunctional principle of neocortex organization.

Sensory systems (sense organs).

1. Sense organs. General morphofunctional characteristics. The organ of taste. Structure, development and cytophysiology.
2. Sense organs. General morphofunctional characteristics. The sense of smell. Structure, development and cytophysiology.
3. The eye. Embryonic development. General plan of the structure. Morphofunctional characteristics of the cornea and lens.
4. Dioptric apparatus of the eye (cornea, lens, vitreous).
- 5.. The structure of the retina. Histophysiological characteristics of photoreceptor cells.
- 6.. Retina of visual, ciliary and iris parts. Histophysiological characteristics of photoreceptor cells.
7. The organ of hearing. Development, structure and histophysiology.

8. The organ of hearing. Sources of development. The structure of the outer, middle and inner ear. Histophysiology of the spiral organ.

9. Body of balance and vibration. Sources of development. Structure and histophysiology.

Cardiovascular system.

1. Cardiovascular system. Morphofunctional characteristics. Classification of vessels. Relationship between hemodynamic conditions and vascular structure.

2. Artery. Classification of types and their morphofunctional characteristics. Muscular artery.

3.. Artery elastic and muscular-elastic types. Age changes.

4. Vessels of a hemomicrocirculatory channel. Morphofunctional characteristics of its links.

5. Arteriole - venular anastomoses. Classification, structure of different types of anastomoses, their functions.

6. Blood capillaries. Building. The main types of capillaries. The concept of histohematological barriers.

7. Vienna. Classification. Development, structure, functions. Dependence of the structure on hemodynamic conditions.

8. Lymphatic vessels. Morphofunctional characteristics. Sources of development.

9. Heart. General plan of the wall structure. Myocardium. Morphofunctional characteristics of contractile and conductive cardiomyocytes.

10. Heart. Sources of development. Histogenesis. General plan of the wall structure. Endocardium.

Hematopoietic organs and immune defense.

1. The concept of the immune system and its tissue components. Classification and characterization of immunocytes and their interaction in humoral and cellular immune responses.

2. Red and yellow bone marrow. Structure and functions. Characteristics of postembryonic hematopoiesis in the red bone marrow. Interaction of stromal and hematopoietic elements.

3. Thymus spleen. Structure and functional significance. Characteristics of postembryonic hematopoiesis in the thymus. The concept of age and accidental involution of the thymus gland.

4. .Spleen. Structure and functional significance. Features of embryonic and post - embryonic hematopoiesis in the spleen. T - and B - zones.

5. Lymph nodes. Structure and functional significance of T - and B - zones of lymph nodes..

Endocrine system.

1. Endocrine system. Classification of endocrine glands. The concept of cells - targets and receptors for hormones.

2. Endocrine system .. Characteristics of single hormone-producing cells.

3. The hypothalamus. Neurosecretory nuclei of the hypothalamus, features of structure and function of neurosecretory cells. Hypothalamic-adenohypophyseal and hypothalamic-moneurohypophyseal system.

4. The pituitary gland. Development, structure, blood supply, histophysiology. Connection of the pituitary gland with the hypothalamus.

5. The pituitary gland. General plan of the structure. Adenohypophysis, its blood supply, connection with the hypothalamus, functional significance.

6. The pituitary gland. and. Neurohypophysis, its blood supply, connection with the hypothalamus, functional significance.

7. The pineal gland. Sources of development. Building. Secretory functions.

8. Thyroid gland. Development, structure, histophysiology, functional significance. Age changes.

9. Thyroid gland. Development, structure, functional significance. Age changes.

10. Adrenal glands. Sources of development. Structure, histophysiology of cortical and cerebral matter. Connection of the adrenal glands with the pituitary gland and the central nervous system. Age changes.

Skin and its derivatives.

1. Leather. Structure and sources of development. Features of the structure of thin skin.

2. Leather. Sources of development. Structure and functions. Physiological regeneration of the epidermis. Features of the structure of thick skin.

3. Derivatives of skin (hair, nails, glands). Hair structure and function. Hair change.

Control 3

1. Digestive canal. General plan of the wall structure. Innervation and vascularization. Morphofunctional characterization of the lymphoid apparatus.

2. Oral cavity. Features of the structure of the mucous membrane of various organs of the oral cavity.

3. Oral cavity. General characteristics of the mucous membrane. Lip and cheek. Development, structure, functions.

4. Hard and soft palate. Development. General structure. Morphological features of the mucous membrane on different surfaces.

5. Language. Development. General plan of the structure. Features of the structure of the mucous membrane on different surfaces.

6. Large salivary glands, their classification, development. Parotid salivary gland, structure, functions.

7. Large salivary glands. General characteristics. Submandibular and sublingual salivary glands.

8. Teeth. General plan of the structure. Dentine. Development, structure, functions. The concept of transparent dentin and interglobular spaces.

9. Teeth. General plan of the structure. Enamel. Structure, functions, development.

10. Teeth. General plan of the structure. Enamel. Structure, functions, development.

11. Teeth. General plan of the structure. Pulp and periodontium. Structure, functions, development.

12. Tooth development. Teething and change.

13. Digestive canal. General plan of the wall structure. Pharynx and esophagus. Its structure and functions.

14. Stomach. General morphofunctional characteristics. Sources of development. Features of the structure of different departments. Innervation and vascularization. Regeneration. Age changes.

15. Gastric glands, their morphofunctional features in different parts of the body.

16. Small intestine. Development. General morphofunctional characteristics. Histophysiology of the crypto-villi system.

17. Large intestine. General morphofunctional characteristics. Sources of development. Structure, regeneration, age changes.

18. Digestive canal. General plan of the wall structure. Morphofunctional characteristics of the endocrine system.

19. The appendix. General morphofunctional characteristics.

20. The liver. General morphofunctional characteristics. Structure of hepatocytes, perisinusoid lipocytes and sinusoid walls.

21. Liver. Sources of development. The structure of the classical hepatic lobe. Representation of the portal lobe and acinus. Regeneration. Age changes.

22. The pancreas. Development. General plan of the structure. Histophysiology, regeneration, age changes.

23. The pancreas. Exocrine part, its structure and functions.

24. Respiratory system. Morphofunctional characteristics. Respiratory and non-respiratory functions, airways. The structure and function of the lining of the nasal cavity.

25. Respiratory system .. Airways. Sources of development. Structure and functions of the trachea and bronchi of different calibers.

26. Lungs. Morphofunctional characteristics. Sources of development. The structure of the respiratory department. Air barrier. Features of blood supply. age changes.

27. Structure and histophysiology of the acinus of the lung.

Control 4

Urinary system.

1. Urinary system, its morphofunctional characteristics. Kidneys. Sources and main stages of development. Structure and features of blood supply.

2. Kidneys. Structure and functional significance of cortical, cortical nephrons.

3. Kidneys. General plan of the structure. Endocrine apparatus of the kidney. Structure and function.

4. Urinary tract. Development. Structure and functional significance. Epithelium of the mucous membrane (urothelium).

Reproductive system.

1. The testicle. Building. Embryonic and postembryonic histogenesis. Functions. Spermatogenesis and its regulation.

2. The testicle. Building. Embryonic and postembryonic histogenesis. The concept of hematotesticular barrier.

3. The vas deferens and accessory glands of the male reproductive system. Testicular appendage. Semen vesicles. Prostate. Structure, functions. Age changes.

4. The ovary. Embryonic and postembryonic histogenesis. Structure and functions. Ovogenesis and its regulation.

5. The ovary. Embryonic and postembryonic histogenesis. General plan of the structure. Endocrine function of the ovary. Age changes.

6. Uterus. Development. Structure and functions. Cyclic changes, hormonal regulation. Age changes.

7. Organs of the female reproductive system. Oviducts and vagina. Changes during the ovarian-menstrual cycle, their hormonal regulation.

8. The mammary gland. Development, structure and functions. Hormonal regulation of the breast.

3.4. Individual tasks

| |
|---|
| 1. Embryonic stem cells: properties. Mesenchymal stem cells applying for auto-transplantation |
| 2. Possibility of stem cells applying in reparative medicine. |
| 3. Embryological basis for the development of neural tube defects. |
| 4. The role of proteasome dysfunction in age-related diseases |
| 5. The role of microautophagy and proteasomal degradation of proteins in cellular homeostasis. |
| 6. Mitochondria as the basis for the extra-nuclear inheritance. Mitochondrial diseases. |
| 7. The method of gene targeting for the treatment of diseases associated with cytoplasmic type of inheritance |
| 8. Teratomas – tumors of embryonic cells |
| 9. Parasitic twin |
| 10. Modern methods of cartilage tissue renewal |
| 11. Mechanisms of skin regeneration. |
| 12. Macrophages - the first line of defense |
| 13. New methods of examination in the period of embryonic development |
| 14. Mechanisms of T-lymphocytes selection in the thymus |
| 15. Hemogram. Diagnostic value of changes in leukocyte formula |
| 16. Mechanisms for hypofunction development of the TTH-dependent cells in the thyroid gland. |
| 17. Features of the histological structure of appendix and its role in the immune system |
| 18. Mechanisms for development of age-associated pathology of central nervous system. Modern conception |
| 19. Clinical and molecular mechanisms of bone tissue remodeling. |
| 20. Microglial cell dysfunction in the development of Alzheimer's disease |
| 21. Defects of digestive tube formation |
| 22. The role of M-cells in local immunity formation and maintenance |
| 23. Age-related changes of female reproductive system. |
| 24. Features of pancreatic blood circulation in exocrine and endocrine parts of |

pancreas.

3.5. Rules for appealing the assessment

http://www.knmu.kharkov.ua/index.php?option=com_content&view=article&id=1226%3A2013-03-25-12-07-55&catid=4%3A2011-05-04-07-20-12&Itemid=19&lang=uk

Criteria of estimation of knowledge and skills in final lesson 1, 2 “Bases of Cytology and General Embryology”

Grade “excellent” (5 points) is given to a student who:

1. Has prepared motivated morphological conclusion on histological slides and electronic photos of the cell by himself and was able to interpret functional condition of cell according to the construction of nucleus and cytoplasm, possible pathologic changings. He has determined germinal leaves, pivotal and provisional organs on the slides of microscopic sections of embryo.
2. Has given irrefragable answers for all theoretical questions using the material of lectures, basic and additional literature. The student was able to answer all theoretical questions that are presented in working program, but are taken out on independent studying.
3. During the computer testing was able to give 100% correct answers and to identify all photos of mount and electronic pictures.

Grade “good” (4 points) is given to a student who:

1. Has prepared motivated morphological conclusion on histological slides and electronic photos of the cell and the embryo by himself. But for all that has given 80-90% correct answers.
2. Has made 1-2 harmless errors or inexact factual statement answering for theoretical questions.
3. During the computer testing was able to give 90% correct answers, including identification of photos of mount and electronic pictures.

Grade “satisfactory” (3 points) is given to a student who:

1. Has made several omissions in motivated morphological conclusion on histological slides and electronic photos of the cell and the embryo and has given 60-79% correct subscriptions.
2. Has given incomplete answers for theoretical questions or has made 1-2 substantial errors.
3. During the computer testing was able to give 90% correct answers, including identification of photos of mount and electronic pictures.

Grade “unsatisfactory” (2 points) is given to a student who:

1. Has made a great deal omission in motivated morphological conclusion on histological slides and electronic photos of the cell and the embryo and has given less than 60% studied structures.
2. Has shown lack of knowledge in basic theoretical points or during answering for theoretical questions has made substantial errors.
3. During the computer testing was able to give under 90% correct answers, including identification of photos of mount and electronic pictures.

7. Criteria of estimation of knowledge and skills in final lessons 3, 4 “Special Histology and Embryology”

Grade “excellent” (5 points) is given to a student who:

1. Has prepared motivated morphological conclusion on histological slides and electronic photos, has given varied analysis of microscopic and submicroscopic construction of concrete tissues by himself, has showed skills of determining tissues and their structural components, was able to interpret functional condition of cellular elements and possible pathological changings; has given the answers for all theoretical questions, using the material of lectures, basic and additional literature. Who has shown knowledge of cellular organization, their interaction, regularity of embryonal development and classification, ability for regeneration and age-related changes.
2. During the computer testing was able to give 100% correct answers and to identify all photos of mount and electronic pictures.

Grade “good” (4 points) is given to a student who:

1. Has prepared motivated morphological conclusion on histological slides and electronic photos by himself. But for all that has given 80-90% correct answers.
2. Has made 1-2 harmless errors or inexact factual statement answering for theoretical questions.
3. During the computer testing was able to give 90% correct answers, including identification of photos of mount and electronic pictures.

Grade “satisfactory” (3 points) is given to a student who:

1. Has made several omissions in motivated morphological conclusion on histological slides and electronic photos of tissues and has given 60-79% correct subscriptions.
2. Has given incomplete answers for theoretical questions or has made 1-2 substantial errors.
3. During the computer testing was able to give 90% correct answers, including identification of photos of mount and electronic pictures.

Grade “unsatisfactory” (2 points) is given to a student who:

1. Has made a great deal omission in motivated morphological conclusion on histological slides and electronic photos of tissues and has given less than 60% studied structures.
2. Has shown lack of knowledge in basic theoretical points or during answering for theoretical questions has made substantial errors.
3. During the computer testing was able to give under 90% correct answers, including identification of photos of mount and electronic pictures.

8. Criteria of estimation of knowledge and skills of current work of students “Basis of Cytology and General Embryology”

Grade “excellent” (5 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered all questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
2. Was able to do 10 test problems and situational tasks about studied subject. Each student gets 10 test problems 30-50 prepared by faculty for each training.

Grade “good” (4 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered 80-90% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
2. Was able to do 8-9 test problems and situational tasks about studied subject.

Grade “satisfactory” (3 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered 60-79% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
2. Was able to do 6-7 test problems and situational tasks about studied subject.

Grade “unsatisfactory” (2 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures wasn’t able to make lighting, to give guidance for mount correctly or has answered under 60% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
2. Was able to do 5 or less test problems and situational tasks about studied subject.

9. Criteria of estimation of knowledge and skills of current work of students “Basis of Cytology and General Embryology”

Grade “excellent” (5 points) is given to a student who:

3. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered all questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
4. Was able to do 10 test problems and situational tasks about studied subject. Each student gets 10 test problems 30-50 prepared by faculty for each training.

Grade “good” (4 points) is given to a student who:

3. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered 80-90% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
4. Was able to do 8-9 test problems and situational tasks about studied subject.

Grade “satisfactory” (3 points) is given to a student who:

3. During the survey about microscopic slides and electronic pictures was able to make lighting, to give guidance for mount correctly, find essential increasing of microscope and has answered 60-79% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
4. Was able to do 6-7 test problems and situational tasks about studied subject.

Grade “unsatisfactory” (2 points) is given to a student who:

3. During the survey about microscopic slides and electronic pictures wasn’t able to make lighting, to give guidance for mount correctly or has answered under 60% questions that teacher gave about studied microscopic slides and electronic pictures during practical training.
4. Was able to do 5 or less test problems and situational tasks about studied subject.

10. Criteria of estimation of knowledge and skills of current work of students “Special Histology and Embryology

Grade “excellent” (5 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures has shown skills of determining varieties of tissues and their structural elements, interpreted features of construction of tissue elements, regularity of growth and regeneration and has answered all questions that teacher gave about tissues that are studied during trainings using microscopic slides and electronic pictures.

2. Was able to do 10 test problems and situational tasks about studied subject. Each student gets 10 test problems 30-50 prepared by faculty for each training.

Grade “good” (4 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures has shown skills of determining varieties of tissues and their structural elements, interpreted features of construction of tissue elements, regularity of growth and regeneration and has answered 80-90% questions that teacher gave about tissues that are studied during trainings using microscopic slides and electronic pictures.
2. Was able to do 8-9 test problems and situational tasks about studied subject.

Grade “satisfactory” (3 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures has shown skills of determining varieties of tissues and their structural elements, interpreted features of construction of tissue elements, regularity of growth and regeneration and has answered 60-79% questions that teacher gave about tissues that are studied during trainings using microscopic slides and electronic pictures.
2. Was able to do 6-7 test problems and situational tasks about studied subject.

Grade “unsatisfactory” (2 points) is given to a student who:

1. During the survey about microscopic slides and electronic pictures hasn't determine varieties of tissues, their structural elements has answered under 60% questions that teacher gave about tissues that are studied during trainings using microscopic slides and electronic pictures.
2. Was able to do 5 or less test problems and situational tasks about studied subject.

4. Educational policy:

1. Do not be late for class, the student receives "ab" in case of delay of more than 15 minutes.
2. Students are allowed to visit classes and lectures only wearing white medical coats.
3. Student must be ready for each lesson, to have a completed workbook.
4. Do not have extraneous conversations during classes; do not disturb a friend while he is answering.
5. Be affectionate, do not devise for illegal copying of materials such as smartphones, eyepiece cameras and other types of recording devices. All digital devices must be put either in a backpack, or in a pocket. The use of such devices during testing is a form of deception. If the teacher saw how you write off during the test, he has the right to deprive you of the grade
6. During the exams, all digital devices must be placed either in a backpack or in a pocket also. If we see that you have a mobile phone or other digital device in your hand or on your desk, we do not proceed to the exams. No excuses will be taken for such violations, so make sure all digital devices are in your pocket or backpack before the exams are over.
7. If you have any questions about the subject during the lesson, do not hesitate to ask them to your teacher. If you still received an unsatisfactory grade, then work off it with your teacher orally.
8. You can work off the missed lesson with the next teacher every day after 13.20. Do not forget that after missing 4 hours, you must work at least 2 hours.

9. Please remember that the teacher has a life outside the department. Do not try to contact him by phone after 17.00 and until 9.00 on weekdays and do not disturb on weekends.
10. Carefully treat the property of the department. Work especially carefully with a microscope and slides.
11. Please do not eat in the classroom.

5. ACADEMIC HONESTY

http://www.knmu.kharkov.ua/index.php?option=com_content&view=article&id=1226%3A2013-03-25-12-07-55&catid=4%3A2011-05-04-07-20-12&Itemid=19&lang=uk

6. RECOMMENDED LITERATURE

1. Junqueira's Basic Histology.- Text and Atlas. Anthony L. Mescher. – McGraw-Hill Education, 2013- 1186h.

7. Sources of the educational information

Dear students! You will find all the information which is necessary for the successful mastering of the course of histology on the distance learning platform of KhNMU Moodle. On the main page you will find the title "Department of Histology, Cytology and Embryology", then choose your specialty (doctors, dentists, etc.). All recommended and additional literature, atlases, video lectures and video presentations, questions KROK-1 and questions for self-control - all this we have prepared for you.

<http://distance.knmu.edu.ua/course/index.php?categoryid=44>

<https://www.youtube.com/channel/UC3rbbyWz9RwBQFyeO3A8P3g/featured>

8. OTHER

Time and place of teaching the discipline:

The Department of Histology, Cytology and Embryology is located at:
4, Nauki Ave, Kharkiv, TLB-building, 3-rd floor.

Auditory halls for lectures and rooms for practical classes: TLB-building, according to the approved schedule.

The classes at our department last 4 hours long. Classes start at 9:00 and 13:20.
Taking into account the breaks classes run:
if the beginning is at 9 o'clock:

9.00-9.45

9.55-10.40

11.10 – 11.55

12.05 – 12.50

if the beginning is at 13.20 o'clock:

13.20- 14.05

14.15 – 15.00

15.30 – 16.15

16.25 – 17.10