



Histology, cytophysiology and embryology

1. IMPRINT	
Academic Year	2023/2024
Department	Faculty of Dental Medicine
Field of study	English Dentistry Division
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full-time program
Type of module / course	Obligatory
Form of verification of learning outcomes	Exam
Educational Unit / Educational Units	<p>Department of Histology and Embryology Center for Biostructure Research 02-004 Warszawa, Chałubińskiego 5 Str. (Anatomicum bldg.) Web site: http://histologia.wum.edu.pl</p> <p>The Department office is open for students on working days. Business hours 9:30 - 14:00, phone/fax 22 629-5282. Department of Medical Genetics, Center for Biostructure Research, Wydział Lekarski 3c Pawińskiego Street, 02-106 Warszawa phone. 22 572 06 95, fax 22 572 06 96 http://www.genetyka.wum.edu.pl</p>
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Teachers	Marek Kujawa, M.D., Ph.D.; marek.kujawa@wum.edu.pl Ewa Jankowska-Steifer, Ph.D, Associate Prof.; ewa.jankowska-steifer@wum.edu.pl Paweł Włodarski M.D., D.D.S., Ph.D Professor; pawel.wlodarski@wum.edu.pl Artur Kamiński, M.D., D.D.S., Ph.D., Associate Prof.; artur.kaminski@wum.edu.pl Krzysztof Szczaluba, M.D., Ph.D; krzysztof.szczaluba@wum.edu.pl

2. BASIC INFORMATION

Year and semester of studies	1 year	Number of ECTS credits	8
FORMS OF CLASSES		Number of hours	ECTS credits calculation
Contacting hours with academic teacher			
Lecture (L)		10	0,4
Seminar (S)		25 + 5 Genetics	1,2
Discussions (D)			
e-learning (e-L)			
Practical classes (PC)		50	2
Work placement (WP)			
Unassisted student's work			
Preparation for classes and completions		110	4,4

3. COURSE OBJECTIVES

O1	Gaining knowledge about structure and function of the cell organelles, tissues and organs, as well as morphological adaptation of tissues to their function.
O2	Gaining knowledge regarding the development of the embryo, development of teeth and the most common fetal abnormalities.
O3	Gaining knowledge regarding identification of histological specimens and characteristic elements of the tissues under the microscope.
O4	Gaining knowledge regarding the histological structure of tissues of the tooth and understanding the physiology of these tissues.
O5	Gaining knowledge regarding the most common genetic disorders and understanding types of heredity.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING

Code and number of the effect of learning in accordance with standards of learning	Effects in time
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Knowledge – Graduate* knows and understands:

A.W1.	structures of the human body: cells, tissues, organs and systems, with particular emphasis on the dental system,
A.W2.	development of organs and the whole organism, with particular emphasis on the masticatory system,
A.W3.	the structure of the human body in a topographic and functional approach,
A.W4.	the role of the nervous system in the functioning of individual organs,
A.W5.	functional importance of individual organs and the systems they create,
B. W17.	selected issues in the field of genetics and molecular biology,
B. W18.	clinical applications of the principles of genetics.

Skills– Graduate* is able to:

A.U2.	operate a microscope, including the use of immersion, and recognize the histological structure of organs and tissues under the microscope, as well as describe and interpret the microscopic structure of cells, tissues and organs and their functions.
B.U5.	apply knowledge of genetics and molecular biology in clinical work.

5. ADDITIONAL EFFECTS OF LEARNING

Number of the effect of learning	Effects of learning in time
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Knowledge – Graduate knows and understands:

K1.	the role and importance of body fluids, including saliva,
K2.	the methods of tissues and organs imaging and the principles of the operation of diagnostic devices for this purpose.

Skills– Graduate is able to:

S1.	interpret the physical phenomena occurring in the masticatory apparatus.
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Social Competencies – Graduate is ready for:

SC1.	the limitations of her/his own skills and the need for continuous training.
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6. CLASSES		
Form of class	Class contents	Effects of Learning
Lectures (L)	<p>L1 – Molecular methods of cell and tissue examination. The lecture contains a synthetic description of selected methods used in histological examinations. In addition to the basic research tools used in Histology, i. e. optical and electron microscopes, the principles of slide preparation, the most important histochemical techniques, and immunodetection methods - including immunohistochemistry and immunofluorescence, and the flow cytometry method, will be presented. Students are also introduced to the main techniques of molecular biology, used to detect proteins (Western-blot, ELISA) and nucleic acids (Northern-blot, Southern-blot, PCR, FISH, microarrays) in cells, tissues or body fluids.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., K2., SC1.
	<p>L2 – Embryology I. Fertilization, preimplantation development of the embryo, implantation, post implantation development of the embryo up to the 4th week of development.</p>	A.W2., W2., SC1.
	<p>L3 – Embryology II. Fetal period, amniotic membrane, the formation and structure of the placenta, the role of neural crest cells in the development of the face and teeth.</p>	A.W2., W2., SC1.
	<p>L4 – Types of oral mucosa. Histological structure of the oral mucosa, major salivary glands and their ducts, the role of secretory cells and ducts cells in the formation of saliva.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., K1., SC1.
	<p>L5 – Tooth structure and development. Histological structure of the tooth and periodontal tissues. Participation of germ layers in the genesis of tooth and periodontal structures. Development of deciduous and permanent teeth. Structure of the enamel-forming organ. Formation of the crown and root of the tooth. Eruption mechanisms.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., S1., SC1.
	<p>L6 – Dentine. Histological structure of dentin. Types of dentine. Structure and function of odontoblasts. Mechanisms of post-damage dentine repair.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., S1., SC1.
	<p>L7 – Enamel. Histological structure of enamel. Structure and dimensions of enamel prisms. Aprismatic enamel.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., S1., SC1.
	<p>L8 – Pulp. Histological structure of the pulp. Vascularization and innervation of the pulp. Pulp cells. Intercellular matrix of the pulp. The function of the pulp as a nutritional structure. The role of the pulp in the repair mechanisms of the dentine.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., S1., SC1.
	<p>L9 – Cement and periodontium. Histological structure and histogenesis of cement. Types of cement. Cement function in repair. Participation of cement in tooth fixation in the alveolus. Histological structure of the periodontal ligament. Periodontal function. Periodontium as an element of the suspensory system of the tooth.</p>	A.W1., A.W2., A.W3., A.W4., A.W5., S1., SC1.
	<p>L10 – Temporomandibular joint, implantable materials in dentistry. Anatomical and histological structure of the joint components: mandibular head, articular fovea and tubercle, disc visualized with MRI, photos and videos of arthroscopy of the temporomandibular joint with disc function. Definitions of biomaterials and biocompatibility - metals, ceramics, polymers (including natural) and their use (screws, plates, dental appliances, implants) - implantable materials for tissue reconstruction (bone grafts, mucosa grafts, barrier</p>	A.W1., A.W2., A.W3., A.W4., A.W5., K1., K2., S1., SC1.

	membranes) and their healing mechanisms - tissue engineering in the reconstruction of alveolar processes (definition, composition, healing mechanisms).	
Seminar (S) Practical classes (C)	S1 – Seminar 1 Construction of an optical microscope. Operating procedure of the optical microscope. Preparation of biological material for evaluation in optical microscopy.	A.W1., A.W3., A.W4., A.W5., K2., SC1.
	S2 – Seminar 2 Electron microscope. Types of electron microscopes. Construction and principle of working with the transmission electron microscopes. Preparation of material for evaluation in an electron microscope. Ultrastructure of selected cytoplasmic organelles.	A.W1., A.W3., A.W5., K2., SC1.
	S3 – Seminar 3 Ultrastructure of the cell nucleus. Structure of the cell nucleus and nuclear envelope. Nuclear organelles. Organization of chromatin in the interphase nucleus. Structure of chromosomes. The proces of mitosis and meiosis.	A.W1., A.W3., A.W5., SC1.
	S4 – Seminar 4 Specialized structures on the epithelial surface. The basement membrane of the epithelium. Intercellular junction types. Junctions of epithelial cell and basement membrane.	A.W1., A.W3., A.W5., SC1.
	S5 – Seminar 5 Types of connective tissue proper. Morphology and types of connective tissue proper. The functions of connective tissue and adipose tissue.	A.W1., A.W3., A.W5., SC1.
	S6 – Seminar 6 Cartilage and bone - similarities and differences in structure and function. Morphology and types of cartilage tissue. Morphology and types of bone tissue.	A.W1., A.W3., A.W5., SC1.
	S7 – Seminar 7 Regulation of bone growth and remodeling. Intramembranous and endochondrial ossification. Bone remodeling. Bone fracture repair. Hormonal regulation of ossification and bone remodeling.	A.W1., A.W3., A.W5., SC1.
	S8 – Seminar 8 Organization and function of the central and peripheral nervous system. Nervous tissue morphology. Structure of neurons. Glial cells in the peripheral and central nervous system. Histology of selected structures of the peripheral and central nervous system.	A.W1., A.W3., A.W4., A.W5., SC1.
	S9 – Seminar 9 Muscular tissue. Types, function, contraction mechanism of smooth muscle cells, cardiomyocytes and skeletal striated muscle fibers.	A.W1., A.W3., A.W4., A.W5., SC1.
	S10 – Seminar 10 Blood and bone marrow, hematopoiesis. Peripheral blood cell morphology. Hematopoietic stem cells, myeloid and lymphoid hemopoiesis.	A.W1., A.W3., A.W5., SC1.
	S11 – Seminar 11 Types of blood vessels. Differences in the histological structure of arterial and venous vessels. Structure of the vascular wall in relation to the diameter of the vessel. Structure and function of endothelial cells. Histological structure of the heart.	A.W1., A.W3., A.W4., A.W5., SC1.
	S12 – Seminar 12 Summary seminar. Histological structure of connective, epithelial, muscular and nervous tissue.	A.W1., A.W2., A.W3., A.W4., A.W5., SC1.
	S13 – Seminar 13 The function of the endocrine glands. The hypothalamic-pituitary-endocrine axis. Functions of the endocrine organs and their regulation.	A.W1., A.W3., A.W4., A.W5., SC1.

<p>S14 – Seminar 14 Hormonal regulation of the female reproduction cycle. Oogenesis. Female reproductive organ morphology. Influence of the phases of the reproductive cycle on the morphology of inner reproductive organs.</p>	<p>A.W1., A.W2., A.W3., A.W5., SC1.</p>
<p>S15 – Seminar 15 Spermatogenesis and spermiogenesis. Hormonal regulation of spermatogenesis and spermiogenesis. Male reproductive organs morphology. The secretory function of male accessory glands.</p>	<p>A.W1., A.W2., A.W3., A.W5., SC1</p>
<p>S16 – Seminar 16 Immune system - structure and function. Morphology of central and peripheral immune organs. Types, morphology and function of lymphocytes.</p>	<p>A.W1., A.W3., A.W5., SC1.</p>
<p>S17 – Seminar 17 Functions of the oral mucosa. Morphology of the major and minor salivary glands. Saliva production. Types of tongue papillae. The structure of taste buds.</p>	<p>A.W1., A.W3., A.W4., A.W5., K1., SC1.</p>
<p>S18 – Seminar 18 Tooth and periodontal development, physiological tooth movements: eruption, mesial drift, orthodontic movements.</p>	<p>A.W1., A.W2., A.W3., A.W5., SC1.</p>
<p>S19 – Seminar 19 Motor and secretory activity of the digestive tract. Differences in the structure and function of the esophagus, stomach, small and large intestine.</p>	<p>A.W1., A.W3., A.W4., A.W5., SC1.</p>
<p>S20 – Seminar 20 Large glands of the digestive system and their functions. Morphology and function of the liver and pancreas - participation in the processes of digestion. Endocrine activity of the digestive system.</p>	<p>A.W1., A.W3., A.W5., SC1.</p>
<p>S21 – Seminar 21 The function of the conducting portion of the respiratory system. The mechanism of gas exchange in the lungs. The role of surfactant in the process of gas exchange.</p>	<p>A.W1., A.W2., A.W3., A.W4., A.W5., SC1.</p>
<p>S22 – Seminar 22 Endocrine and exocrine functions of the kidneys. Morphology and function of the nephron. Regulation of urine filtration and concentration processes. Histology of the juxtaglomerular apparatus - functions of the renin-angiotensin system.</p>	<p>A.W1., A.W3., A.W5., SC1.</p>
<p>S23 – Seminar 23 Morphology of the epidermis and its derivatives. Skin functions. Structure and function of the mammary gland. Histological structure of the eyeball and retina.</p>	<p>A.W1., A.W3., A.W4., A.W5., SC1.</p>
<p>S24 – Seminar 24 Review of histological slides - microscopic anatomy.</p>	<p>A.W1., A.W5., SC1.</p>
<p>S25 – Seminar 25 Summary seminar, histological structure of the digestive, urinary, respiratory, lymphatic, male and female reproductive systems, skin and sense organs.</p>	<p>A.W1., A.W2., A.W3., A.W4., A.W5., SC1.</p>
<p>S1 – Seminar G1 Pedigrees drawing. Inheritance types. Genomic imprinting. Principles of subjective examination in medical genetics (including pedigree drawing). Types of inheritance (multifactorial, autosomal dominant and recessive, X-linked, mitochondrial), genomic imprinting. Genetic diseases in dentistry (e. g. Gardner syndrome, Ehlers-Danlos syndrome, MSXI and PAX9 gene mutations, mandibular-facial dysostosis, cleidocranial dysplasia, amelogenesis imperfecta, dentinogenesis imperfecta, Prader-Willi syndrome).</p>	<p>B.W17., B.W18., B.U5.</p>
<p>S2 – Seminar G2 Basics of cytogenetics and molecular genetic techniques. Diagnostic methods in medical genetics: karyotyping, FISH, CGH, aCGH, Sanger DNA sequencing, next generation sequencing. Types of</p>	<p>B.W17., B.W18., B.U5.</p>

mutations and chromosome aberrations. Basics of cytogenetic nomenclature. Genetic diseases in dentistry (including Down syndrome, Turner syndrome, Klinefelter syndrome, Edwards syndrome, Patau syndrome, Cri du chat syndrome).	
C1 – Class 1 Various cell types. Principles of working with an optical microscope. Observation of different types of cells in an optical microscope; isolated smooth muscle, cultured fibroblasts, nerve cells impregnated with silver salts.	A.W1., A.W3., A.W5., A.U2., SC1.
C2 – Class 2 Cellular compartments. Ultrastructure of cytoplasmic organelles. Mitochondria, lysosomes, peroxisomes, microtubules, Golgi apparatus, smooth and rough endoplasmic reticulum in transmission electron micrographs.	A.W1., A.W3., A.W5., AU2., SC1.
C3 – Class 3 Cell division. Structure and function of the cell nucleus. Interphase nucleus. Cell morphology in mitosis and meiosis. Cell division of cultured fibroblasts.	A.W1., A.W3., A.W5., AU2., SC1.
C4 – Class 4 Epithelial tissue, glands - histological structure. Histological structure and types of epithelial tissue. Glandular tissue. Types of glands.	A.W1., A.W3., A.W5., A.U2., SC1.
C5 – Class 5 Connective tissue proper and adipose tissue - histological structure of loose connective tissue proper, dense connective tissue proper. White and brown adipose tissues.	A.W1., A.W3., A.W5., A.U2., SC1.
C6 – Class 6 Cartilage and bone tissue - histological structure. Hyaline and elastic cartilage, compact and spongy bone.	A.W1., A.W3., A.W5., A.U2., SC1.
C7 – Class 7 Bone formation. Intramembranous and early stage of endochondrial ossification. Histological structure of the joint capsule and synovial membrane.	A.W1., A.W3., A.W5., A.U2., SC1.
C8 – Class 8 Nervous tissue, central and peripheral nervous system - histological structure. Peripheral nerve in cross section, isolated nerve fiber, brain cortex, spinal cord and ganglion.	A.W1, A.W3, A.W4, A.W5, A.U2., SC1.
C9 – Class 9 Histological structure of muscle tissues. Smooth muscle tissue, cross-striated skeletal muscle and cardiac muscle.	A.W1., A.W3., A.W4., A.W5., A.U2., SC1.
C10 – Class 10 Types of blood cells and red bone marrow. Blood film slide, bone marrow smear. Histological structure of the red bone marrow.	A.W1., A.W3., A.W5., A.U2., SC1.
C11 – Class 11 Histological structure of arteries, veins, capillaries and heart. Muscular artery, elastic artery, medium-sized vein, continuous capillaries, endocardium and myocardium.	A.W1., A.W3., A.W5., A.U2., SC1.
C12 – Class 12 Review of histological slides - general histology.	A.U2., SC1.
C13 – Class 13 Histological structure of selected endocrine glands. adenohypophysis, neurohypophysis, parathyroid, thyroid, adrenal, pineal gland.	A.W1., A.W3., A.W4, A.W5., A.U2., SC1.
C14 – Class 14 The female reproductive system. Histological structure of the ovary, fallopian tube, uterus (proliferative phase and secretory phase), vagina, vestibule of vagina.	A.W1., A.W2., A.W3., A.W4, A.W5., A.U2., SC1.

C15 – Class 15 Male reproductive system. Histological structure of the male reproductive organs. Testis, vas deferens, epididymis, prostate.	A.W1., A.W2., A.W3., A.W4, A.W5., A.U2., SC1.
C16 – Class 16 Lymphatic system Histological structure of the organs of the lymphatic system. Central and peripheral lymphatic organs: thymus, lymph node, palatine tonsil, white and red pulp of the spleen.	A.W1., A.W3., A.W5., A.U2., SC1.
C17 – Class 17 Oral cavity. Histological structure of salivary glands and tongue. Filiform papillae, circumvallate papillae (taste buds), von Ebner gland, sublingual gland, parotid gland.	A.W.1, A.W3., A.W4., A.W5., A.U2., SC1.
C18 – Class 18 Tooth and periodontal organs. Histological structure of the tooth and periodontium at various stages of development. Enamel organ, apical foramen.	A.W1., A.W2., A.W3, A.W4., A.W5., A.U2., SC1.
C19 – Class 19 Gastrointestinal tract. Histological structure of the esophagus, stomach, jejunum, duodenum and colon.	A.W1., A.W3., A.W4., A.W5., A.U2., SC1.
C20 – Class 20 Gastrointestinal glands. Histological structure of the liver and pancreas. Lymphatic tissue of the digestive system - ileum, appendix.	A.W1., A.W3., A.W.5, A.U2., SC1.
C21 – Class 21 Respiratory system. Histological structure of the respiratory system. Lung - structure and function of different types of pneumocytes. Conducting portion - trachea, bronchi, bronchioles.	A.W1., A.W3., A.W5, A.U2., SC1.
C22 – Class 22 Urinary system - histological structure. Renal cortex and medulla, renal corpuscle, nephron, collecting ducts, ureter and urinary bladder. Glomerular filtration and urine concentration mechanisms. RAS (renin, angiotensin, aldosterone system).	A.W1., A.W3., A.W5, A.U2., SC1.
C23 – Class 23 Skin and sensory organs. Histological structure of the skin and its appendages. Active and inactive mammary gland. Histological structure of the eye.	A.W1., A.W3., A.W4., A.W5., A.U2., SC1.
C24 – Class 24 Practical intermediate examination.	A.U2., SC1.
C25 – Class 25 Review of histological slides before final examination - general histology and microscopic anatomy.	A.U2., SC1.

7. LITERATURE

Obligatory

1. Junqueira's Basic Histology: Text and Atlas, last edition
2. Gartner L. P., "Textbook of Histology", 2021, Elsevier, 5th Edition,
3. Sadler T. W. "Langman's Medical Embryology", last edition
4. Daniel J. Chiego, Jr.: "Essentials of Oral Histology and Embryology": A Clinical Approach, Elsevier 5th Edition, 2018.
5. Medical genetics by Jorde Lynn B., Carey John C., Bamshad Michael J. Mosby Elsevier, last edition.

Supplementary

1. Nanci A. "Ten Cate's - Oral Histology", Elsevier, last edition.

8. VERIFYING THE EFFECT OF LEARNING		
Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
A.W1., A.W2, A.W3, A.W4, A.W5., K1., K2., S1.	Intermediate examination, final examination.	minimum 60 % of good answers in total
A.W1., A.U2., SC1.	Practical class – notebook drawings, practical intermediate examination, practical final examination.	credit from the teacher; minimum 60 % of good answers in total in practical intermediate and final examinations
B.W17, B.W18.	intermediate examination.	minimum 50 % of good answers in total
B.U5	Oral report on the task performed	correct draw up pedigree based clinical description of the family and interpretation genetic test result

9. ADDITIONAL INFORMATION
<p>1. The student research club is supervised by Izabela Młynarczuk-Biały, M.D, Ph.D. Associate professor and Ryszard Galus, M.D. Ph.D., Associate professor http://histologia.wum.edu.pl - Studenckie Koło Naukowe</p>
<p><u>General regulations – Histology, cytophysiology and embryology for EDD students 2023/2024</u></p> <p>Organization of classes and seminars</p> <ol style="list-style-type: none"> Histology, Cytophysiology and Embryology are taught during lectures, seminars and practical classes. The presence in lectures, seminars and practical classes is obligatory. Coming late to class by more than 15 minutes will be treated as an absence. Classes begin with the seminar followed by a practical part. Students have to be prepared for the class. The Tutor will verify the student's preparation for the class. Subject of seminars and classes are specified in the Topics of classes and lectures. Proper preparation for the seminar and class is evaluated by the introductory knowledge test (weekly quiz). During the class, students discuss with their professor topics of the class and inspect microscopic slides, schemes and electronograms. Images of tissues and organs inspected under the microscope should be drawn with color crayons in the notebook. All drawings have to be properly described (legend to the drawing). Microscopes are provided for every student in the class. At the end of the class the student should switch off the microscope and cover it. Microscopic slides, electronograms, microscopes or their parts must not be removed from the class. During the period preceding intermediate or final examinations, every student group can borrow a set of demonstration slides for home training. Sets can be exchanged any number of times. Before exchanging or returning the set, students have to put slides in order, according to the attached list. Students are financially liable for lost or damaged slides. <p>Presence in the classes and seminars</p> <ol style="list-style-type: none"> To get the credit for the semester Student must be present in lectures and seminars and get credit in all classes. The prerequisite for getting a credit for the class is a positive note received on the knowledge of the discussed subject and properly done drawings of microscopic slides. Days of classes, including days of intermediate examinations, are days of obligatory presence. It is permitted to be absent up to 2 times during lectures and 2 times during classes in each semester. Absence must be justified with the tutor. Absence from 3 or more classes, regardless of the reason, results in not getting a credit for the semester, hence the student will not be admitted to the intermediate examination. When students are absent, they are expected to negotiate with professors the form for make-up of lectures, seminars or classes missed.

6. The student is obliged to make up for missed class.
7. Classes uncredited because of an absence or being unprepared must be credited in the form established by the Head of the Department. The Head of the Department will appoint the date of this test.

Credit

1. Dates of the intermediate examinations are decided by the university Pedagogical Council and cannot be changed.
2. Only students who were present in lectures, seminars and got credit for all the classes are admitted to the intermediate examination.
3. Intermediate examination in general histology and in microscopic anatomy consist of two parts: practical (slide recognition) and theoretical.
4. Intermediate examination in embryology has no practical part.
5. Intermediate examinations on the first and the second date are MCQ tests. Third final attempt of the intermediate examination (commission) have the form that is determined by the Head of the Department and is set after the permission obtained from the Dean's office.
6. Electronic intermediate examination tests online consist of 50 single choice questions. The duration of intermediate examination is 50 minutes. Electronic test examinations are held in the building of The Main Library in the computer room.
7. The criteria to pass the test are determined by the Head of the Department, after the test, and they are expected to be not less than:
 - 60% of all questions in the test.
8. **Students may evaluate their paper during the quiz. Then, if any reservations arise, students can flag the question and express their concerns. Later complaints will not be accepted.**
9. The Department appoints two dates for each intermediate examination.
10. Intermediate practical part must be passed before the date of the retake MCQ test. Students who failed the practical part of any intermediate examination before the date of the retake examination will not qualify for the retake and last retake of MCQ test.

Final examination

1. The final examination comprises topics discussed during classes, seminars and lectures.
2. The student must pass all intermediate examinations scheduled in the program of the course to be admitted to the final examination.
3. Dates of the final examinations are decided by the university Pedagogical Council and cannot be changed.
4. The Final examination consists of two parts: practical and theoretical.
5. Failing the practical or theoretical part results in failing the examination.
6. **The Head of the Department can set an oral appointment of THEORETICAL final examination for students, who obtained at least 88% of all points received on intermediate examinations. For the appointment the student needs to apply to the Head of the Department in writing (template of the application is available on the Department web site). Student IS NOT exempted from PRACTICAL examination.**
7. **The PRACTICAL EXAMINATION must be taken BEFORE the appointment with the Head of the Department.**
8. In the case of an absence during the final examination caused by medical condition, the student should present doctor's leave during three working days from the date of the examination or will receive a failing mark.
9. The retake of the examination is held during the retake examination session. If the student fails this examination, he/she can apply to the Dean for permission to take the second retake of the examination.

Practical examination

1. The practical part of the examination consists of recognizing 10 histological slides. The minimal number of recognized slides is 6. For each additionally recognized slide, the student receives 1 point, and for recognizing 10 slides - 5 points.
2. Students who failed practical examination on the first date will take the MCQ test, whose positive result will be treated as the result of retake examination (student has to take again only practical examination).
3. Students who passed practical examination on the first date, but failed the MCQ test, do not have to take the practical examination once again during the retake (student has to take again only MCQ test).

Theoretical examination

1. The theoretical part of the examination is the MCQ test that consists of 100 single choice questions. The duration of intermediate examination is 100 minutes. Electronic test examinations are held in the building of The Main Library in the computer room.
2. The examination test contains questions on tooth and oral cavity histology as well as questions on other topics discussed in the course.
3. The criteria to pass the test are determined by the Head of the Department, after the test, and they are expected to be not less than:
 - 60% of questions in the remaining part of the test.
4. **Students may evaluate their paper during the quiz. Then, if any reservations arise, students can flag the question and express their concerns. Later complaints will not be accepted.**

Final grade

1. Final mark is set on the basis of both: practical and theoretical examination. Points received on both parts of the examination are considered.
2. Points from the practical examination are added to the points received on the MCQ test only for students who had passed the MCQ test.
3. Points from the practical examination are added only once. These points are not added in examinations conducted during the retake session.

Position of the Chair regarding cheating during examinations

Cheating on examinations is a breach of ethics and Regulations of Studies at the Warsaw Medical University. A Person actively or passively participating in cheating shall be punished by being expelled from the examination and receiving a failing mark. On top of that, the Department shall institute disciplinary procedure against the cheating students.

A Person actively participating in cheating is the one **who copies results from other students or uses illegal notes or electronic devices. Bringing such devices to examinations is forbidden.**

Passive participation in cheating means allowing other students to copy one's own responses. Thus, a student is obliged to behave honestly, not to allow other students to copy his/her own responses.

The Head of the Department obliges students and examiners to strictly obey these regulations.

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ATTENTION

The final 10 minutes of the last class in the block/semester/year should be allocated to students'
Survey of Evaluation of Classes and Academic Teachers