Attachment no 5 5 to Resolution
of the Senate of Medical Academy in Wroclaw no 1138
of 24 April 2012 r.
5 Amended by Resolution no 1441 of the Senate of MUW
of 24 September 2014 r

Standard Course Syllabus on the academic year 2015/2016			
Description of the subject			
Na Name of subject:	**Histology with cytophysiology**	**The group of detailed educational results**	
		Group code: **A,B**	**Group name:** Morphological Science
Faculty:	**Medicine**		
Major:	**medicine**		
Speciality	**Not applicable**		
Level of studies	**Uniform MA Studies X**		
Form of studies	**full-time X part-time X**		
Year of studies:	**I**	**Semester:**	Winter/Summer
Type of class:	obligatory X elective		
Language of instruction:	**English X**		

Unit: **Department of Histology and Embryology**	**Course hours** — **Form of education**								
	Lectures (L)	Seminars (SE)	Auditorial Classes (AC)	Major Classes – not clinical (MC)	Clinical Classes (CC)	Laboratory Classes (LC)	Classes in Simulated conditions (CSC)	Foreign Language Course Minimum (FLC)	Optional Classess (OC) – minimum 24 students
Winter semester									
	11			30					
Summer semester									
	12			70					
Total per year:	**123**								

Educational aims: (max. 6 items)
During the course of histology students should know:

C1

- the principles of the basic techniques used in the morphological studies,
- the organization of the cell model with cell organelles, their structure and functions,
- structure and function of selected, important specialized cells,
- classification, characteristics, origin, histological organization and role of the tissues,
- histological organization of organs and systems and their role and the basic mechanisms that regulate their functions.

C2. During the course of cytophysiology students should know:

- the principles of the methods used in the study of cell function,
- processes of cellular organelles and mechanisms of their regulation,
- life cycle, cell differentiation, regulation of these processes and the aging of cells,
- the types of cell death (apoptosis, necrosis, autophagy, mitotic catastrophe),
- biological membranes and membrane transport,
- cytoskeleton structure,
- the organization of the cell nucleus, genes, genetic engineering,
- mechanisms of intercellular interaction and their importance,
- most important processes such as the immune response, cell adhesion, and neoplasia.

The education result matrix for the course in relation to the methods of intended education result verification and to the type of class.

No. of the subject education result	No. of the education result	Student who has obtained a credit from the subject knows/ can/ is able to	Methods of the achievment verification	Type of class ** Enter the symbol
W 01	AW1	The student is familiar with histological nomenclature	Oral response, written examination	L, C
W02	AW4	The student knows the basic cell structures and their functional specialization	Oral response, written examination	L, C
W03	AW5	The student knows the microarchitecture of the tissues, extracellular matrix and organs.	Oral response, written examination, proper drawing preparation	L, C
W04	B.W14.	The student knows function of the genome, transcriptome and proteome of the human and essential methods used in their analyses, and describes the process of replication, DNA repair and recombination, transcription and translation, and degradation of DNA, RNA and protein, knows gene regulation concepts	Oral response, written examination	L, C
W05	B.W21	The student knows the ways of communication between cells, and between the cell and extracellular matrix, and signal transduction pathways in the cell, and examples of disorders in these processes leading to the development of neoplastic and other diseases	Oral response, written examination	L, C
W06	B.W22.	The student is familiar with	Oral response, written	L, C

		processes such as cell cycle, proliferation, differentiation, and cell aging, apoptosis and necrosis, and understands their importance to the functioning of the body.	examination	
W07	B.W23.	The student is familiar with the basic issues of stem cells and their use in medicine	Oral response, written examination	L, C
W08	B.W24.	The student knows the basics of stimulation and conduction in the nervous system, and higher nervous activity and physiology of smooth muscle fibers and functions of the blood.	Oral response, written examination, proper drawing preparation	L, C
U 01	AU1	The student knows how to use optical microscope	Practical examination	MC
U02	A.U2	The student recognizes in images from optical or electron microscope histological structures corresponding to the organs, tissues, cells and cellular structures, shall describe and interpret their structure and the relationship between structure and function	Oral response, written examination, proper drawing preparation, practical examination	MC
U03	A.U5	The student properly uses the spoken and written histological nomenclatures.	Oral response, written examination, practical examination	MC

** L - Lecture; SE - seminar; AC – Auditorial classes ; MC – Major classes (not clinical); CC – Clinical classes; LC – Laboratory Classes; CSC – Classes in Simulated Conditions; FLC – Foreign Language Course; OC – Optional Classes

Please use a cross to mark a scale 1-3, how the mentioned education results place Your class in the following sections: the transfer of knowledge, transfer of skills: (ex. knowledge +++; skills ++)

Knowledge (K): +++
Skills (S):++

Student's workload input (ECTS points)	
The form of student's workload	**Student's workload (h)**
1. Lessons on-site (hrs.):	123
2. Student's own work (hrs.):	148,4
Summary of the student's workload:	271,4
ECTS points per subject:	9,5
Notes:	

Subject of class: (please provide the topic of individual classes including type of class; remember the topic of class has to translate into intended education results).
In the case of coordinated subjects, please provide the topic of performed classes separately for each unit performing them:

Lecture

- Epithelial tissue: epithelia and glands, specializations of cells surface, intercellular connections.
- Connective tissue: supporting cells family, extracellular matrix, cartilage, bone, and their development.
- Blood, blood cells and hematopoiesis.

- Muscle tissue: types of contractile cells and their function.
- Heart and vascular system.
- Immune system: immune cells, structure and function of the immune system.
- Alimentary tract: oral cavity and its elements, conductive sections and digesting portions.
- Alimentary tract: liver and pancreas.
- Endocrine system: the hypothalamus, pituitary gland, thyroid and parathyroid, adrenal, pancreas, ovary and testis, neuroendocrine system.
- Respiratory: conductive and respiratory parts.
- Urinary system: kidney structure and function of the nephron – corpuscle and tubules.
- Reproductive system: male and female: ovary and uterus, testis and epididymis, hormonal control.
- Nervous system: structure and function of neurons, glial tissue, central and peripheral nervous system.
- The skin and mammary gland.
- Sensory organs: eye and ear.
- Recognition of histological sections (repeat).

Seminar

- not applicable

Histology classes:

- Histological techniques, microscopic structure and function of cells. Presentation of the rules of the classes. Presentation: H+E staining, Azan, silvering, injecting.
- Epithelial tissue: epithelia and glands, specialized surface of cells, intercellular connections. Presentation: simple cuboidal, cylindrical and stratified squamous epithelium.
- Connective tissue: supporting cells family, extracellular matrix, cartilage, bone, and their development. Presentation: Reticular tissue, loose connective tissue, regular dense fibrous connective tissue, yellow adipose tissue, hyaline cartilage, elastic cartilage, fibrous ossification, compact lamellar bone tissue.
- Blood, blood cells and hematopoiesis Presentation: human blood - smear.
- Muscle tissue: types of contractile cells and their function. Presentation: smooth muscle tissue, striated skeletal and cardiac muscle tissue.
- Heart and vascular system. Presentation: an artery and vein of muscle type, aorta and a large vein.
- Immune system: immune cells, structure and function of the immune system. Presentation: lymph node, thymus young and in involution, tonsil, spleen.
- Alimentary tract: oral cavity and its elements. Presentation: tongue, oral lip, parotid and submandibular gland, tooth, esophagus, stomach – bottom, small intestine – duodenum, small intestine – jejunum, appendix.
- Alimentary tract: the digestive glands. Presentation: liver and pancreas.
- Endocrine system: the hypothalamus, pituitary gland, thyroid and parathyroid, adrenal, pancreas, neuroendocrine system. Presentation: pituitary, thyroid, parathyroid, adrenal gland.
- Respiratory: conductive and respiratory parts. Presentation: nasal cavity, trachea, lung.
- Urinary system: kidney structure and function of the nephron – corpuscle and tubules. Presentation: Kidney, ureter, urinary bladder.
- Reproductive system: male and female: ovary and uterus, testis and epididymis, hormonal control. Presentation: ovary, fallopian tube, uterus, testis, epididymis, vas deferens, prostate.
- Nervous system: structure and function of neurons, glial tissue, central and peripheral nervous system. Presentation: the spinal cord, nerve ganglia, brain, cerebellum, nerve trunk.
- The skin and mammary gland. Presentation: eye - the front part, the eye - the optic disc, eyelid, inner ear.
- Sensory organs: eye and ear.
- Recognition of histological sections (repeat).

Cytophysiology classes:

- Testing methods of structure and function of cells, ultrastructural images of cells with an electron microscope. Presented electronograms: nucleus, nucleolus, nuclear envelope, mitochondria, Golgi apparatus, rough endoplasmic reticulum, free ribosomes.
- The organization and functioning of the cell nucleus. Genes and genetic engineering.
- Biological membranes and membrane transport.
- Cell cycle and aging of cells.
- Types of cell death: apoptosis, autophagy, necrosis.
- The cytoskeleton.
- Selected cytoplasmic processes.
- Intercellular communication.
- Adhesion molecules and intercellular substance.
- Basics of immune defence.
- Carcinogenesis.

Primary sources: (list in accordance with significance, not more than 3 items)

1. Basic Histology. L. Carlos Junqueira, Jose Carneiro, Robert O. Kelly
2. Human Histology. Alan Stevens, James Lowe
3. Exercise notebook for medicine and dentistry student (ed. Maciej Zabel). Elsevier Urban & Partner, Wrocław 2010

Secondary sources with other didactic help: (not more than 3 items)

1. Histology and Cell Biology: An Introduction to Pathology. Abraham Kierszenbaum
2. Histology: a text and atlas. Michael H. Ross, Gordon I. Kaye, Wojciech Pawlina
3. Medical Cell Biology. Steven R. Goodman

Requirements for teaching resources: (e.g. laboratory, multimedia projector, other ...)
classroom with a computer and multi-media projector and whiteboard with markers

Preliminary terms and conditions:
(minimal terms and conditions required before the student commences the course).
lack

Conditions for completing the course: specify the terms and conditions for completing the classes included in the subject's scope, specify the requirements the student has to meet to be allowed to sit in the theoretical and/or practical exam, specify the form of the exam and the requirements for passing the exam, specify the criteria for particular grades

Examination of the first semester:

Test from the general histology: written, 10 open questions. To complete 51% correct answers is required.

Examination of the second semester:

Test of practical skills: 10 slides from general histology, 5 slides from detailed histology with pointed elements, 2 electronograms. To pass correctly have to be distinguished at least 7 slides from general histology, 3 from detailed histology and 1 electronogram.

The condition for admission to the final examination of the theoretical: completion of the second semester

Grade:	Grade criteria: (only for subjects completed with the exam)
Very good (5,0)	**100 and more correct answers**
Good plus (4,5)	**91 – 99 correct answers**
Good (4,0)	**82 – 90 correct answers**
Sufficiently good (3,5)	**73 – 81 correct answers**
Sufficient (3,0)	**64 – 72 correct answers**

Name and address of unit conducting the course, contact information: telephone and e-mail

Department of Histology and Embryology

Wroclaw Medical University

ul. Chalubinskiego 6a, 50-368 Wroclaw

tel.: (71) 784-13-54(55), fax: (71) 784-00-82

e-mail: justyna.kosek@umed.wroc.pl

The list of teachers performing the classes: Name and Surname, academic or professional degree/title, field of study, occupation, type of classes:

In the case of coordinated subjects, please provide the topic of performed classes separately for each unit performing them.

1. **Marzenna Podhorska-Okolow MD, PhD, Prof.(professor) - classes**
2. **Urszula Ciesielska PhD (adiunct) – lectures, classes**
3. **Christopher Kobierzycki MD, PhD (assistant)– lectures, classes**

Person responsible for the course::

Marzenna Podhorska-Okolow MD, PhD, Prof.

Drawn up on (date):

30. 06. 2015

The syllabus has been drawn up by

Urszula Ciesielska PhD

Signature of the Head of the unit conducting the course

Uniwersytet Medyczny we Wrocławiu
KATEDRA I ZAKŁAD
HISTOLOGII I EMBRIOLOGII
Kierownik
prof. dr hab. Piotr Dzięgiel

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The signature of the Dean of the Faculty of Medicine

Wroclaw Medical University
FACULTY OF MEDICINE
VICE-DEAN FOR STUDIES IN ENGLISH
Prof. Andrzej Hendrich, PhD

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