





TOTAL per year:												
	10		60									

Educational objectives (max. 6 items)  
**C1.** the principles of the basic techniques used in the morphological studies,  
**C2.** the organization of the cell model with cell organelles, their structure and functions,  
**C3.** structure and function of selected, important specialized cells,  
**C4.** classification, characteristics, origin, histological organization and role of the tissues,  
**C5.** histological organization of organs and systems and their role and the basic mechanisms that regulate their functions

**Education result matrix for module/course in relation to verification methods of the intended education result and the type of class**

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarising)	Form of didactic class <i>**enter the abbreviation</i>
W 01	AW1	The student is familiar with histological nomenclature;	Oral response, written examination	L, MC
W02	AW4	The student knows the basic cell structures and their functional specialization	Oral response, written examination	L, MC
W03	AW5	The student knows the microarchitecture of the tissues, extracellular matrix and organs.	Oral response, written examination, proper drawing preparation	L, MC
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, MC
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	Oral response, written examination	L, MC



		these processes leading to the development of neoplastic and other diseases		
<b>W06</b>	B.W22	The student is familiar with processes such as cell cycle, proliferation, differentiation, and cell aging, apoptosis and necrosis, and understands their importance to the functioning of the body.	Oral response, written examination	L, MC
<b>W07</b>	B.W23	The student is familiar with the basic issues of stem cells and their use in medicine	Oral response, written examination	L, MC
<b>W08</b>	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, MC
U 01	AU1	The student knows how to use optical microscope	Practical examination	MC
U 02	AU2	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
<b>U03</b>	A U3	The student properly uses the spoken and written histological nomenclatures.	Oral response, written examination, practical examination	MC

\*\* L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .

Please mark on scale 1-5 how the above effects place your classes in the following categories:  
communication of knowledge, skills or forming attitudes:  
Knowledge: 5  
Skills:4  
Social competences: 3

Student's amount of work (balance of ECTS points)



Student's workload (class participation, activity, preparation, etc.)	Student Workload (h)
1. Contact hours:	70
2. Student's own work (self-study):	114
Total student's workload	184
ECTS points for module/course	10
Comments	
<b>Lectures (L)</b> <ol style="list-style-type: none"><li>1. Alimentary tract: liver and pancreas. (1h)</li><li>2. Endocrine system: the hypothalamus, pituitary gland, thyroid and parathyroid, adrenal, pancreas, ovary and testis, neuroendocrine system. (1h)</li><li>3. Respiratory: conductive and respiratory parts. (1h)</li><li>4. Urinary system: kidney structure and function of the nephron – corpuscle and tubules. (1h)</li><li>5. Reproductive system: male and female: ovary and uterus, testis and epididymis, hormonal control. (1h)</li><li>6. Nervous system: structure and function of neurons, glial tissue, central and peripheral nervous system. (1h)</li><li>7. The skin and mammary gland. (1h)</li><li>8. Sensory organs: eye and ear. (1h)</li><li>9. Recognition of histological sections (repeat). (1h)</li><li>10. Recognition of histological sections (repeat). (1h)</li></ol>	
<b>Content of histology classes (MC):</b> <ol style="list-style-type: none"><li>1. Alimentary tract: the digestive glands. Presentation: liver and pancreas. (3h)</li><li>2. Endocrine system: the hypothalamus, pituitary gland, thyroid and parathyroid, adrenal, pancreas, neuroendocrine system. Presentation: pituitary, thyroid, parathyroid, adrenal gland. (3)</li><li>3. Respiratory: conductive and respiratory parts. Presentation: nasal cavity, trachea, lung. (3h)</li><li>4. Urinary system: kidney structure and function of the nephron – corpuscle and tubules. Presentation: Kidney, ureter, urinary bladder. (3h)</li><li>5. Reproductive system: male and female: ovary and uterus, testis and epididymis, hormonal control. Presentation: ovary, fallopian tube, uterus, testis, epididymis, vas deferens, prostate. (3H)</li><li>6. Nervous system: structure and function of neurons, glial tissue, central and peripheral nervous system. Presentation: the spinal cord, nerve ganglia, brain, cerebellum, nerve trunk. (3h)</li><li>7. The skin and mammary gland. Presentation: eye - the front part, the eye - the optic disc, eyelid, inner ear. (3h)</li><li>8. Sensory organs: eye and ear. (3h)</li><li>9. Recognition of histological sections (repeat). (3h)</li><li>10. Recognition of histological sections (repeat). (3h)</li></ol>	
<b>Cytophysiology classes (MC):</b> <ol style="list-style-type: none"><li>1. 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. (3h)</li></ol>	



2. The organization and functioning of the cell nucleus. Genes and genetic engineering. (3h)
3. Biological membranes and membrane transport. (3h)
4. Cell cycle and aging of cells. (3h)
5. Types of cell death: apoptosis, autophagy, necrosis. (3h)
6. The cytoskeleton. (3h)
7. Selected cytoplasmic processes. (2h)
8. Intercellular communication. (2h)
9. Adhesion molecules and intercellular substance. (2h)
10. Basics of immune defence. (2h)
11. Endothelium. (2h)
12. Carcinogenesis. (2h)

Seminars - not applicable

Practical classes -not applicable

Other - not applicable

Basic literature (list according to importance, no 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

Additional literature and other materials (no 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

Didactic resources requirements (e.g. laboratory, multimedia projector, other...)

Classrooms with optical microscopes, optical microscope with camera and monitor, laptop, multimedia projector, whiteboards with markers, histological slides

Preliminary conditions (minimum requirements to be met by the student before starting the module/course)

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Conditions to receive credit for the course:

Each absence must be made up, including rector days and dean's hours.

1. CHECKING PRACTICAL SKILLS: 10 general, 5 targeted, 2 electronograms (maximum 17) - to pass the correct recognition of at least 7 general preparations, 3 targeted and 1 electronogram (minimum 11 points - 7 + 3 + 1). Failure to obtain the minimum number of points in a given category (general preparation, targeted preparation, electronogram) results in an unsatisfactory assessment, despite obtaining a total sum of points of 11 or more. The student proceeds to the second term of the practical test.



2. CYPHYSIOLOGY TEST: form: written, 50 single-choice questions. 26 correct answers required to pass.

The final grade for passing the subject in the winter semester is the result of the practical test. The criteria for individual assessments are presented in the table below.

Condition for admission to the final exam: passing the third semester

<b>Grade:</b>	<b>Criteria for passing the subject :</b>
Very Good (5.0)	Practical Exam – 17 pkt
Good Plus (4.5)	Practical Exam – 15-16 pkt
Good (4.0)	Practical Exam – 13-14 pkt
Satisfactory Plus (3.5)	Practical Exam – 12 pkt
Satisfactory (3.0)	Practical Exam – 11 pkt
<b>Grade:</b>	<b>Final Exam – Criteria</b>
Very Good (5.0)	Point range depending on Gauss classification
Good Plus (4.5)	Point range depending on Gauss classification
Good (4.0)	Point range depending on Gauss classification
Satisfactory Plus (3.5)	Point range depending on Gauss classification
Satisfactory (3.0)	Point range depending on Gauss classification. Minimum 60% correct answers

**Name and address of module/course teaching unit, contact: telephone and e-mail address**

Division of Histology and Embryology

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**Coordinator / Person responsible for module/course, contact: telephone and e-mail address**

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tel. 71 784 16 70

**List of persons conducting specific classes:**

1. Marzenna Podhorska-Okolow MD, PhD, Prof. (professor, medicine) - classes MC
2. Urszula Ciesielska PhD (adiunct, medical biology) – lectures, classes - L, MC
3. Christopher Kobierzycki MD, PhD (adiunct, medicine,) lectures, classes – L, MC
4. Katarzyna Haczkiwicz PhD (assistant, medical biology) - classes – MC
5. Karolina Jabłońska Phd (adiunkt, medical biology) - classes - MC

**Date of Syllabus development**

20.06.2018

**Syllabus developed by**

**Urszula Ciesielska PhD**

**Signature of Head of teaching unit**

Uniwersytet Medyczny we Wrocławiu  
ZAKŁAD HISTOLOGII I EMBRIOLOGII

  
prof. dr hab. Piotr Dzięciel

**Signature of Faculty Dean**

Wrocław Medical University  
FACULTY OF MEDICINE  
OFFICE FOR STUDIES IN ENGLISH  
  
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