

Course description

Part 1

General information about the course											
1. Major of study: medicine	2. Study level: unified MSc 3. Form of study: intramural										
4. Year: III	5. Semester: V, VI										
6. Course name: HISTOLOGY											
7. Course status: required											
8. Course contents and assigned learning outcomes											
Introduction to histology											
Ultrastructure of the cell - functional specializations											
Connective tissue - cells, intercellular matrix, bone formation											
Muscle tissue - mechanism of contraction											
Lymphatic system											
Nervous system. Neurogenesis											
Sensory organs - eye											
Transmitters, synapses, receptors											
Cardiovascular system											
Vasculogenesis and angiogenesis											
Digestive system - liver, pancreas											
Endocrine system - organs and DNES											
Urinary system											
Respiratory system											
Male reproductive system											
Female reproductive system											
Structure and function of fetal membranes and placenta											
Learning outcomes / reference to learning outcomes indicated in the standards For knowledge – student knows and understands: <table> <tr> <td>Knows histological and embryological nomenclature</td><td>A.W1</td></tr> <tr> <td>knows cellular structures and their functional specializations</td><td>A.W4</td></tr> <tr> <td>knows microarchitecture of tissues, extracellular matrix and organs</td><td>A.W5</td></tr> <tr> <td>knows developmental stages of human embryo, organization of placenta and fetal membranes and development of individual organs.</td><td>A.W6</td></tr> <tr> <td>knows the ways of communication between cells, cell and extracellular matrix and pathways intracellular signal transduction.</td><td>B.W21</td></tr> </table>		Knows histological and embryological nomenclature	A.W1	knows cellular structures and their functional specializations	A.W4	knows microarchitecture of tissues, extracellular matrix and organs	A.W5	knows developmental stages of human embryo, organization of placenta and fetal membranes and development of individual organs.	A.W6	knows the ways of communication between cells, cell and extracellular matrix and pathways intracellular signal transduction.	B.W21
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knows the ways of communication between cells, cell and extracellular matrix and pathways intracellular signal transduction.	B.W21										

For skills student can do:

Can operate optical microscope	A.U1
Using optical microscope can differentiate structures characteristic for particular organs, tissues and cells. Can interpret their organization and relations between their structure and function	A.U2
Has ability to use histological nomenclature both in written and spoken form.	A.U5

For social competencies student is ready to:

Has ability for constant self education

9. Number of hours for the course		90
10. Number of ECTS points for the course		7
11. Methods of verification and evaluation of learning outcomes		
Learning outcomes	Methods of verification	Methods of evaluation*
Knowledge	Grade credit – MCQ	*
Skills	Report Observation Practical exam	*
Competencies	Observation	*

* The following evaluation system has been assumed:

Very good (5,0) – the assumed learning outcomes have been achieved and significantly exceed the required level

Better than good (4,5) – the assumed learning outcomes have been achieved and slightly exceed the required level

Good (4,0) – the assumed learning outcomes have been achieved at the required level

Better than satisfactory (3,5) – the assumed learning outcomes have been achieved at the average required level

Satisfactory (3,0) – the assumed learning outcomes have been achieved at the minimum required level

Unsatisfactory (2,0) – the assumed learning outcomes have not been achieved

Course description

Part 2

Other useful information about the course		
12. Name of Department, mailing address, e-mail: Department of Histology and Embryology; histologia@sum.edu.pl		
13. Name of the course coordinator: Ryszard Wiaderkiewicz		
14. Prerequisites for knowledge, skills and other competencies: basic knowledge of biology and human anatomy		
15. Number of students in groups	In accordance with the Senate Resolution	
16. Study materials	Major readings	
	Junqueira's Basic Histology: Text and Atlas, 15th ed.	
	Wheater's Functional Histology: A Text and Colour Atlas. 5th ed.	
	Supplemental readings	
	Michael H. Ross PhD, Wojciech Pawlina, Histology: A Text and Atlas, with Correlated Cell and Molecular Biology, 8th ed.	
17. Location of classes	Department of Histology and Embryology	
18. Location and time for contact hours	Department of Histology and Embryology; Mon.- Fri. (9am-2pm)	
19. Learning outcomes		
Number of the course learning outcome	Course learning outcomes	Reference to learning outcomes indicated in the standards
P_W01 / C_K01	Knows histological and embryological nomenclature	A.W1
P_W02 / C_K02	knows cellular structures and their functional specializations	A.W4
P_W03 / C_K03	knows microarchitecture of tissues, extracellular matrix and organs	A.W5
P_W04 / C_K04	knows developmental stages of human embryo, organization of placenta and fetal membranes and development of individual organs.	A.W6
P_W05 / C_K05	knows the ways of communication between cells, cell and extracellular matrix and pathways intracellular signal transduction.	B.W21
P_U01 / C_S01	Can operate optical microscope	A.U1
P_U02 / C_S02	Using optical microscope can differentiate structures characteristic for particular organs, tissues and cells. Can interpret their	A.U2

	organization and relations between their structure and function	
P_U03 / C_S03	Has ability to use histological nomenclature both in written and spoken form.	A.U5
20. Forms and topics of classes		Number of hours
21.1. Lectures		
Introduction to histology		1
Ultrastructure of the cell - functional specializations		1
Connective tissue - cells, intercellular matrix, bone formation		2
Muscle tissue - mechanism of contraction		1
Lymphatic system		2
Nervous system. Neurogenesis		2
Sensory organs – eye & ear		1
Cardiovascular system		1
Digestive system - liver, pancreas		3
Endocrine system - organs and DNES		1
Urinary system		1
Respiratory system		1
Male reproductive system		1
Female reproductive system		2
Σ		20
22.2. Seminars		
Introduction to histology, histological technics.		1
Epithelial tissue and exocrine glands - classification, structure and function.		2
Connective tissue - cells, intercellular matrix, bone formation and remodeling		2
Blood and hemopoiesis. Stem cells, cell lineages, regulation.		1
Muscle tissue - classification. Mechanisms of striated and smooth muscle cell contraction. Conductive system of the heart.		2
Lymphatic system- cells involved in immune response. Primary and secondary lymphatic organs.		2
Nervous tissue. Classification of neurons. Neuroglial cells. Central and peripheral nervous system.		2
Integumentary system - epidermis, dermis, sensory receptors, appendages of the skin.		2
Sensory organs - eye and ear		2
Digestive system part 1 - oral cavity, tonsils, tooth development, liver and pancreas		2
Digestive system part 2 - intestines, GEP		2
Endocrine system - organs (pituitary, thyroid, parathyroid, adrenal, suprarenal, pineal) and DNES		2
Respiratory system - conductive and respiratory part		2
Urinary system - kidney, structural and functional organization of the nephron, RAA - juxtaglomerular apparatus.		2
Male reproductive system - testis, ducts, accessory glands, penis		2
Female reproductive system - ovary and ovarian cycle, fallopian tube, uterus and menstrual cycle, placenta		2
Σ		30
23.3. Labs		
Practising the optical microscopy		2
Epithelial tissue and exocrine glands - classification, structure and function.		2
Connective tissue		4
Blood - immersion technic		2
Muscle tissue		2

Cardiovascular system	2
Lymphatic system	4
Nervous tissue and nervous system	2
Integumentary system	2
Sensory organs	2
Digestive system	6
Endocrine glands	2
Urinary system	2
Respiratory system	2
Male reproductive system	2
Female reproductive system	2
Σ	40
24. Readings	
Major readings	
Junqueira's Basic Histology: Text and Atlas, 15th ed.	
Wheater's Functional Histology: A Text and Colour Atlas. 5th ed.	
Supplemental readings	
Michael H. Ross PhD, Wojciech Pawlina, Histology: A Text and Atlas, with Correlated Cell and Molecular Biology, 8th ed.	
25. Detail evaluation criteria	
In accordance with the recommendations of the inspection bodies Completion of the course – student has achieved the assumed learning outcomes Detail criteria for completion and evaluation of the course are specified in the course regulations	